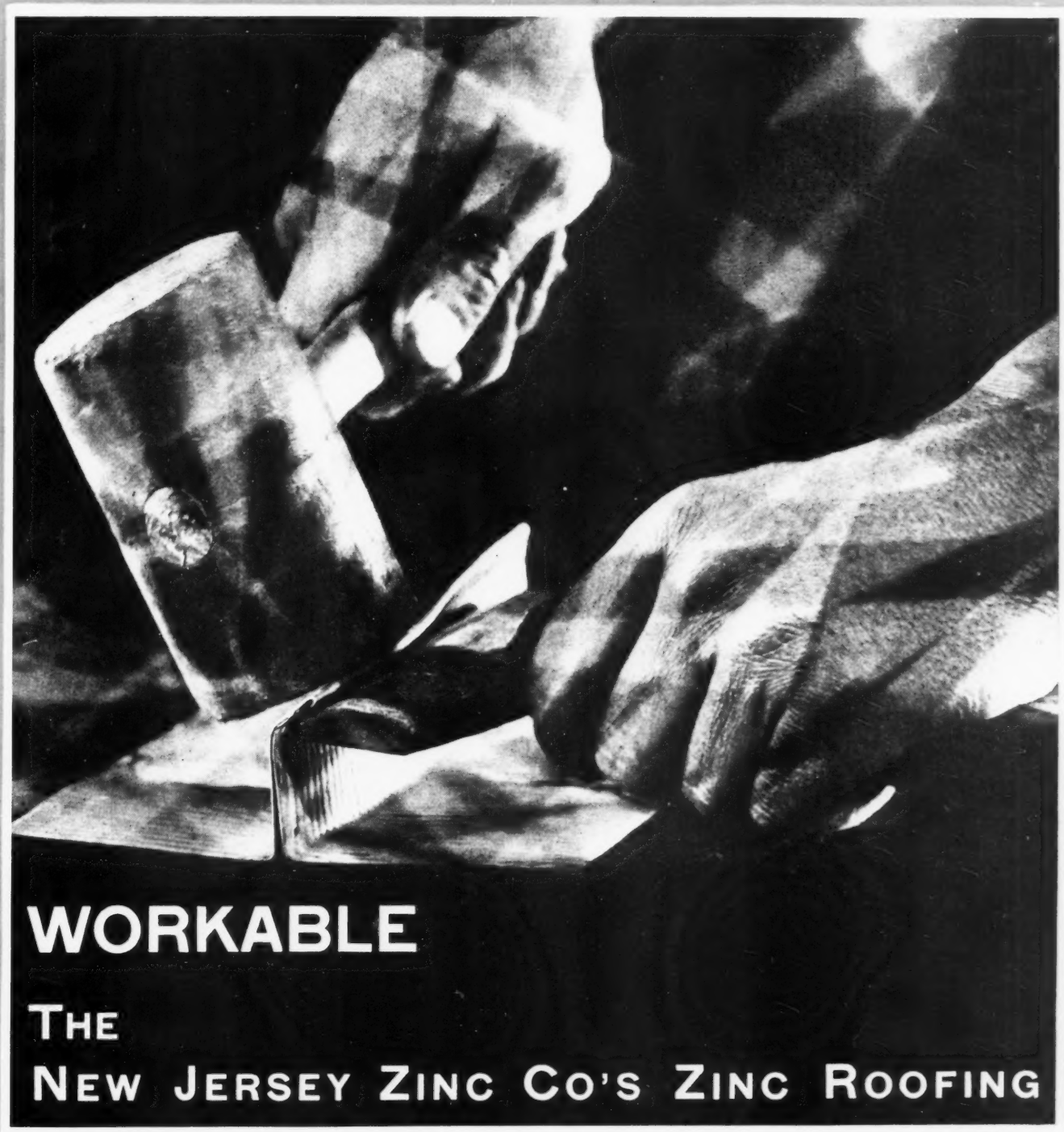
American Artisan

Founded 1880

The Warm Air Heating and Sheet Metal Journal

Vol. 97, No. 10 CHICAGO, MARCH 9, 1929 $2.00 Per Year



New Jersey Zinc

THE NEW JERSEY ZINC SALES CO.
160 FRONT STREET, NEW YORK

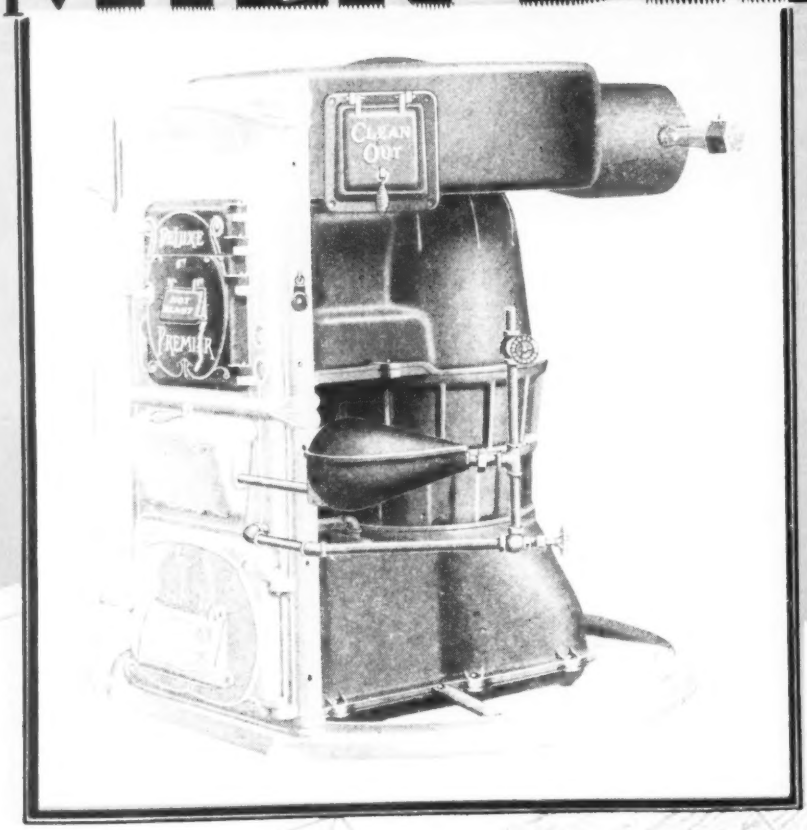
New Jersey Zinc

Index Pages 58 and 78

The Only Weekly Covering the Field

Buyers' Directory Pages 80-84

PREMIER·DELUXE



The third of a series of twelve advertisements to appear on this page

chain stores

Their Fingers Are At Your Throat

ALREADY the choking has started. You independent dealers know what is happening. Cut prices! Cheap furnaces! Underhanded tactics! Anything to get the job away from you.

RESULT? Skimpy installations. No profits. Complaints. A black eye for the warm air industry. Finally the independent dealer gives up and the chain stores have it their own way.

WHAT can you do? Here is the answer!

FIRST—Don't buy from a furnace manufacturer who operates a chain of branch stores. If you establish a reputation for his furnaces in your town, sooner or later he'll open up a chain store on the work you've already done. Ask the first six furnace salesmen who call on you whether your line of furnaces is being handled thru a chain of manufacturer's branches.

SECOND—Buy from a manufacturer who has lined up on the side of the independent dealer and who has some real help to offer in fighting chain stores.

THIRD—Come to the Premier Dealers' Convention to learn the latest tactics in meeting this new cut-throat competition. The leading furnace dealers of the country will be there.

Read "Are You Afraid of Chain Stores?" in the March Pictorial

PREMIER WARM AIR HEATER CO., DOWAGIAC, MICH.

PREMIER
DE LUXE
HEALTHY
HUMID
HEAT

THE 18 POINT SERIES

POINT NO IV

OUTSIDE SHAKER LEVER
-WAIST HIGH-

AGAIN Progress is noted in the Midland TRUESTEEL, for we have succeeded in obtaining Ease in Operation without the loss of Cleanliness, Economy, Simplicity and Convenience.

Men distinguished for their knowledge and experience in the furnace industry labored many days to design and equip the Midland TRUESTEEL with the outside shaker lever, which would combine all features and give ease in operation under any conditions.

Note the illustration! Does it not suggest to you Ease in Operation, Simplicity, Convenience, and, above all, Cleanliness? Of course the entire secret of easy operation is not in the Shaker Lever only, but also in the Midland Rotary Grate. These two features alone will break down sales resistance and make furnace selling easier. Investigate!

The 18-Point TRUESTEEL Will Bring Bigger Profits to *YOU!*

IF you are interested in selling "Cleaner Heat" in easy operation, in creating more satisfied customers, in sales cooperation, in better profits, in leadership, in a 10-Year Guarantee,—then write today for information covering the TRUESTEEL Exclusive Territory Franchise.

THE TRUESTEEL is guaranteed 10 years

THE MIDLAND FURNACE CO.
COLUMBUS, OHIO
WAREHOUSES: MARSHALLTOWN, IOWA

TRUESTEEL

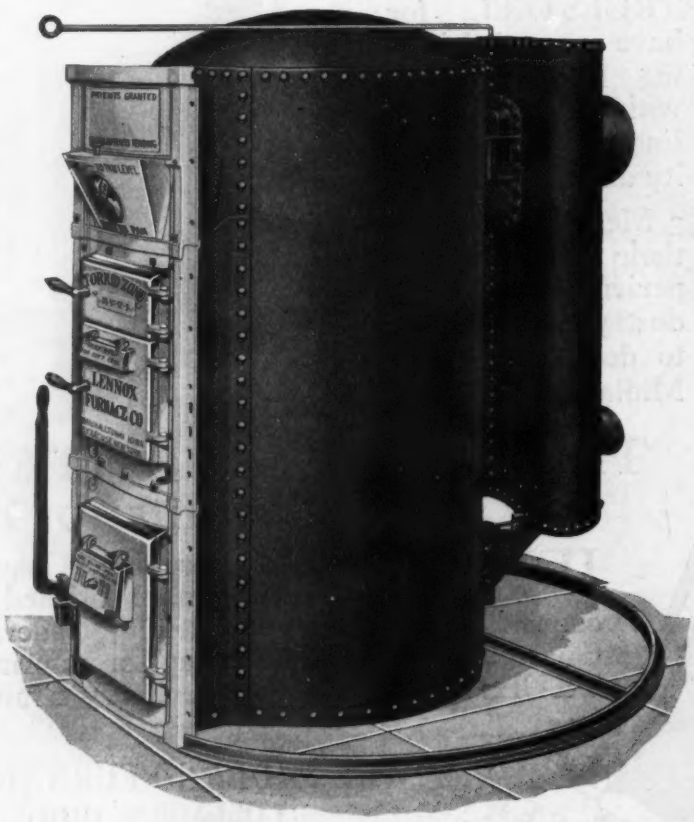
LET US SEND YOU A TRUESTEEL CATALOGUE

MIDLAND FURNACES

ALL STEEL CLEANER HEAT

Published Weekly by American Artisan and Hardware Record, Inc., 620 South Michigan Avenue, Chicago Illinois. AMERICAN ARTISAN—the Warm Air Heating and Sheet Metal Journal—entered as second class matter, March 26, 1928, at the Post Office at Chicago, Illinois, under act of March 3, 1879. Formerly entered on June 25, 1887, as American Artisan and Hardware Record.

A Still Greater TORRID ZONE for 1929



New Features in 1929
TORRID ZONE Steel
Gas Tight Furnaces

Twenty-two Per Cent More Effective Radiating Surface in the Furnace Body.

Fifteen Per Cent Additional Radiating Surface in Radiators.

Deeper Fire Pots.

Higher Combustion Chambers in All Series.

Improved Base Rings.

Improved Casing Liners.

The 1929 TORRID ZONE furnace is now in full production and can be had in sixteen body sizes, not counting special furnaces for wood, oil and hard coal.

It has always been our policy to improve the TORRID ZONE from year to year but this year finds a complete change in body heights and improved radiators. The TORRID ZONE has always been considered a very efficient heater and now with the improvements just added we have increased the heating power by adding more effective radiating surface. An increase in radiating surface gets more heat out of the same amount of fuel. This is the thing in which your customers are interested.

We welcome your inquiries

LENNOX FURNACE COMPANY, INC.

Marshalltown, Iowa - - - - Syracuse, New York

In Canada
LENNOX FURNACE COMPANY OF CANADA, LTD.
Toronto

The FLORENCE

... it's a real "HOT BLAST"

FOR almost three-quarters of a century the Florence Hot Blast principle has been famous as the most efficient ever devised for warm air heating. Its action is positive and fully controlled by a damper so simple a child can regulate it. With the Florence, the question of fuel does not mean how good, *but how cheap,* for the Florence burns the lowest grade as efficiently as it does the high priced fuels. This factor together with the almost total absence of smoke and soot and low percentage of ashes makes the Florence the most desirable furnace for thrifty buyers.

The materials and workmanship of the Florence are the same as found in furnaces costing much more money. Two types are available—the open dome and radiator.

Write for Catalog and Illustrated Literature for full particulars.

TRADE MARK

Radiator Type Heating Unit

This is the heating unit with the durable cast radiator for farther heat travel. It is built for quick radiation and gives immediate results. There is no waiting for heat with this furnace.

It burns low grade soft coal or slack without smoke, soot or dirt. The fire bowl is extra heavy and in two sections to prevent cracking. The feed and ash-pit doors are extra large.

DEALERS WANTED

An unusually attractive proposition is awaiting live wire dealers. Write us today.

C. EMRICH COMPANY

Founded in 1861

COLUMBUS - - OHIO

Manufacturers also of the famous **SUPREME FLORENCE HEATER and FLORENCE STOVES.**

I AM INTERESTED!

Please send full details and descriptive literature about FLORENCE FURNACES to

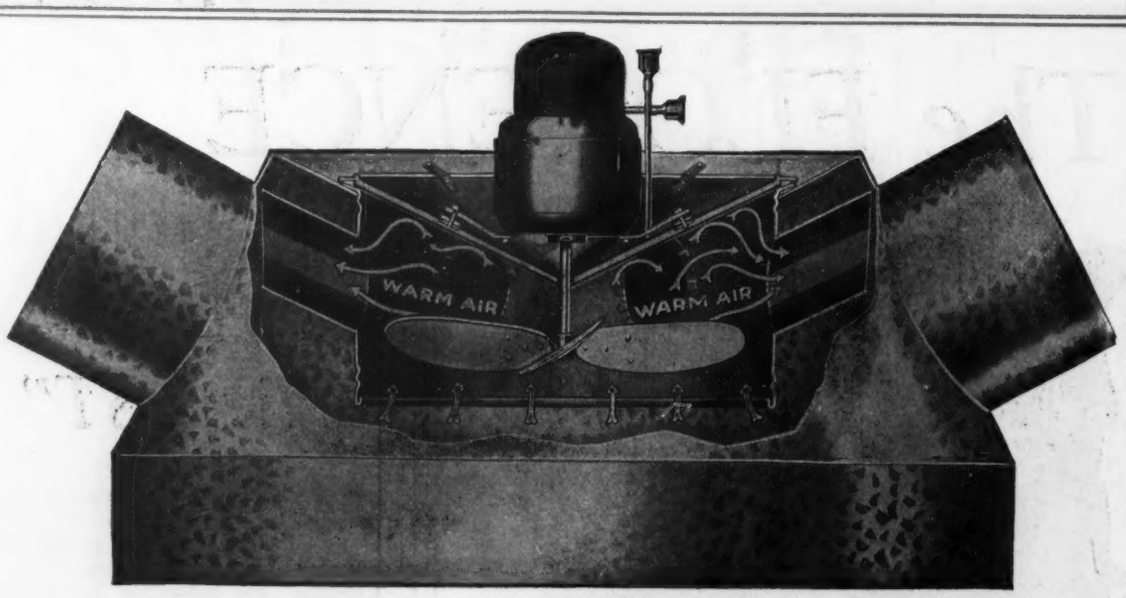
NAME .....

ADDRESS .....

CITY .....

STATE .....

A. A. 3-29



ROBINSON

Heat Distributor

NOTHING in connection with better warm air heating has had such instant acceptance as the Robinson Heat Distributor.

This acceptance and its sale and wide distribution is the result of *quality* and *efficiency*.

No other furnace fan is like it—no other fan does the work of the Robinson Heat Distributor—no other fan is so simple.

No other fan can be installed so quickly, easily and economically.

It is adaptable to any and every make and design of warm air furnace.

BAKER-PAYNE-VOYE CO.....Boston, Mass.
THE BECKWITH CO., Dowagiac, Mich.
CARR SUPPLY CO.....Chicago, Ill.
DAYTON-HESSLER CO., Syracuse, N. Y.
DEMMLER BROS. CO., Pittsburgh, Pa.
FARRIS FURNACE CO., Springfield, Ill.
C. L. FEATHERSTONE FURNACE CO.....Spokane, Wash.
FOLLANSBEE BROTHERS CO., Pittsburgh, Rochester, Cincinnati, Memphis, Detroit, Indianapolis, Milwaukee, Louisville.
FLORAL CITY HEATER CO.....Monroe, Michigan
FOX FURNACE CO.....Elyria, Ohio
HEATING AND SUPPLY CO.....Pittsburgh, Pa.
HENRY FURNACE & FOUNDRY CO., Cleveland, O.; Indianapolis, Ind.; Pittsburgh, Pa.
M. K. HOKE.....Manheim, Pa.
HOMER FURNACE CO.....Coldwater, Mich.
IDEAL FURNACE CO.....Detroit, Mich.
W. E. LAMNECK CO.....Columbus, O.
LENNOX FURNACE CO., Inc.....Syracuse, N. Y.
LENNOX FURNACE CO. OF CANADA, LIMITED, Toronto, Ontario and Winnipeg, Manitoba.
THE MAJESTIC COMPANY.....Huntington, Ind.
MARSHALLTOWN HEATER CO.....Marshalltown, Iowa
MAY-FIEBEGER CO.....Newark, O.; Akron, O.
MONCRIEF FURNACE CO., Atlanta, Ga.
NEW IDEA FURNACES, LTD.....Ingersoll, Ont., Can.
J. M. & L. A. OSBORN CO.....Cleveland, O.; Buffalo, N. Y.
PEASE FOUNDRY CO., LTD.....Toronto, Ontario, Canada
PENINSULAR STOVE CO., Detroit, Mich.
PORTLAND STOVE FOUNDRY CO.....Portland, Maine
RICHARDSON & BOYNTON CO.....New York, Chicago, Boston, Philadelphia, Buffalo, Minneapolis, Newark, N. J.
THE SCHILL BROS. CO., Crestline, O.
WESTERN STEEL PRODUCTS CO.....Duluth, Minn.
GEO. F. WHEELOCK CO.....Birmingham, Ala.
WISE FURNACE CO.....Akron, Ohio

ITS patented design makes it possible to supply extra heat to exactly the room or rooms needing it

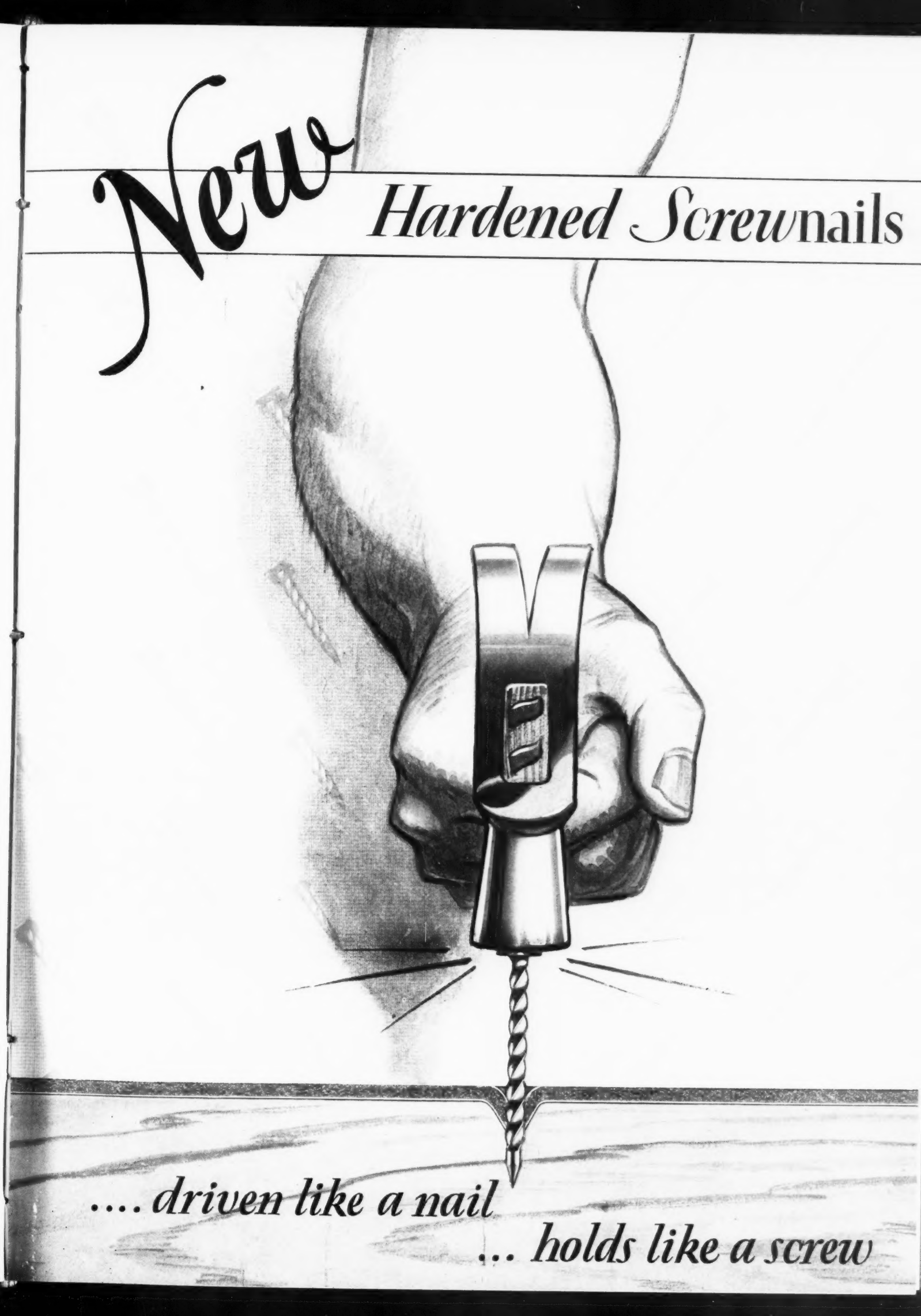
It creates no vibration—it is noiseless — Requires no change in cold air returns—offers no interference with gravity operation and causes no back pressure. Write for full details and prices today.

Any of the Jobbers listed on this page will send you complete descriptive matter and prices. Order from them. They carry Robinson Heat Distributors in stock and will make prompt shipments.

The Robinson Heat Distributor will help you sell more and better warm air heating at a better profit.

The A. H. ROBINSON COMPANY .... MASSILLON, OHIO

New Hardened Screwnails

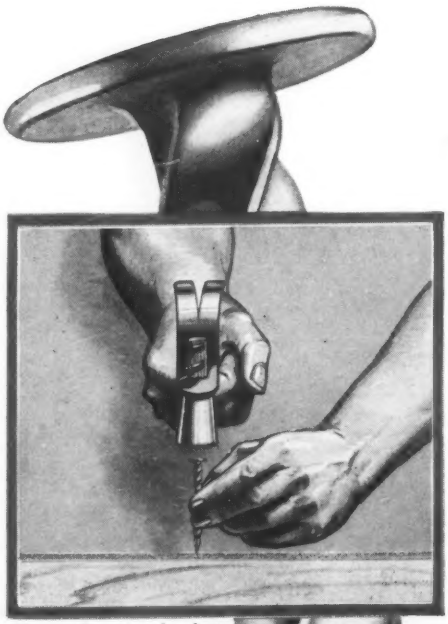


.... driven like a nail

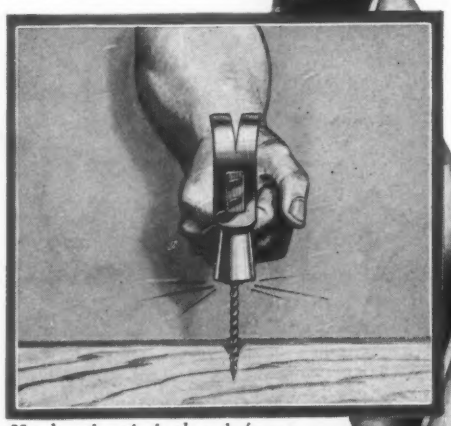
... holds like a screw

Fasten sheet metal to wood with *Screw*nails...

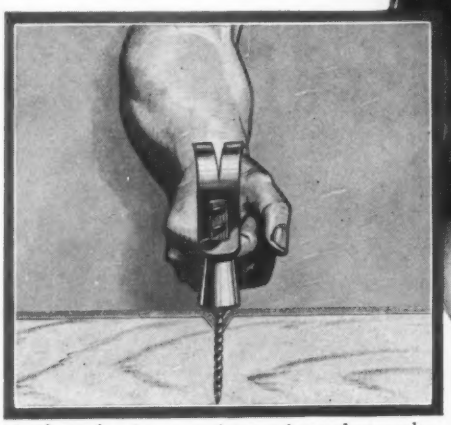
4 times the holding power of ordinary nails!



No need to punch a hole . . . sharp needle point pierces sheet metal with ease.



Hardened spiral thread forms a thread in the sheet metal and wood as you drive it in.



Anchors the sheet metal securely to the wood —won't back out.

WE have worked for a long time on a nail for fastening sheet metal to wood, which would not bend, back out or loosen as do ordinary nails. We have finally perfected such a nail.

This new Nail is called the Screwnail because it combines the qualities of both nail and screw—it drives like a nail; it holds like a screw.

We have subjected it to severe tests. Others have tried it. Results all show that this Nail is far superior to ordinary nails.

Screwnails have a hardened spiral thread and a needle-pointed pilot, which enables them to be driven through heavier sheet metal than ordinary nails without bending—in many instances eliminating the necessity of punching or drilling holes. The hardened spiral thread forms a thread in the metal burr and wood, securely fastening the sheet metal to the wood.

Laboratory tests made at Columbia University show that Hardened Screwnails have over 4 times the holding power of ordinary nails.

Screw*nails *can be used to advantage by:

Sheet Metal Workers: For fastening cornices, metal ceilings, corrugated siding and sheet metal work generally to wood.

Roofers: For laying tin roofing, for fastening gutters, flashings, etc. to wood.

Fireproof Window and Door Manufacturers: For attaching moulding, trim, etc., to metal-clad windows and doors.

Automobile Manufacturers and Body Builders: For fastening body, door and roof panels, trim pads, upholstery, windbreaks, body, drip and running board mouldings, etc.

Railroads: For fastening roofing and attaching flashings to freight and passenger cars; fastening metal sheathing, insulation, etc., to refrigerator cars; attaching weather strip, mouldings, etc.

and by sign makers, refrigerator manufacturers and others who fasten sheet metal to wood in the manufacture of their products.

Return the coupon for samples of Hardened Screwnails. Try them on your work. See how much better they are than ordinary nails.

PARKER-KALON CORPORATION.
190 Varick Street,

Please send me a handful of Hardened Screwnails. I want to try them out for

.....

Name.....

Address.....

.....

PARKER-KALON
HARDENED
*Screw*nails

PATENTED JAN. 29, 1924-No. 1482151
OTHER PATENTS PENDING

PARKER-KALON CORP. 190 Varick Street NEW YORK

WE maintain a free engineering department. Send in your plans. If you have a blue print or a pencil sketch showing size of rooms, size of windows, location and size of chimney, mail it to us and we will submit an estimate of material for a complete installation.

WESTERN

THE Western *Heavy Duty* Heater is massively constructed to heat schools, churches, auditoriums, or community halls. In single settings, as above, or collectively, meeting requirements of various temperatures.

Heater and large radiator fit snugly into elliptical galvanized casing, leaving no waste space. Made of copper-bearing steel with fire brick lining, large and roomy combustion chamber, heavy corrugated dome. Grates operated from a standing position.

Radiator has hollow circulation center for increased heating surface. Easily cleaned from either side. Makes powerful combination when connected with the large Western. Can be connected to 8 x 12 flue.

THE Western Furnace Factory is advantageously located at the Head of the Great Lakes where freight rates are low during the 9 months navigation season.

The other distributing points, listed below, enable the Western to be delivered to any part of the country at advantageous freight rates. The Western is sold from Alaska to Florida, and exported to New Zealand, Australia, and Canada.

Western Steel Products Company

130 Commonwealth Ave.

DULUTH, MINNESOTA, U. S. A.

Distributed by:

Atlanta, Ga.....Moncrief Furnace Company
Kansas City.....Kansas City Furnace Co.
Pittsburgh, Pa.....Wagener-Prole Furnace Co.
San Francisco.....
.....Pacific Sheet Metal & Furnace Co.

Cincinnati, Ohio..Niehaus Furnace & Repair Co.
Ravenna, Ohio.....Ravenna Furnace Company
Chicago-Western Steel & Products Co.....
.....3025 W. Van Buren St.

One of a Complete NEW Line

—the new GIBRALTAR Top-Radiator Furnace

THE extra large radiator insures maximum heating efficiency with minimum fuel. The construction of the Gibraltar Top Radiator Furnace prevents gas, dust, or smoke leakage; makes for ease of operation; and assures long life.

The Gibraltar line, embodying many new and patented features, is just what dealers want. The furnaces are low in price, considering their quality, but are not manufactured on a "price proposition" basis. They are the kind which will make your business grow. A prompt, reliable, and thoroughly experienced engineering service is at the command of every Gibraltar dealer. Write for details today.

Address Inquiries to Sales Dept. A

P. H. MaGirl Foundry & Furnace Works

BLOOMINGTON - ILLINOIS

YOU DON'T USE FIFTY LANTERNS TO HEAT A ROOM

—so why use two or three small furnaces to do the job one FLORAL CITY TUBULAR FURNACE would do.

THE heater that comparisons are made with—big, heavy, strong, efficient, with years of service and reputation behind it.

Easy to clean, made in a wide range of sizes, two clean-out doors on each side of front,—extra heavy return tubes—two shaker handles—and made low enough to be used either as gravity or forced air installation.

JUST WHAT YOU WANT to go after the big jobs that have been going hot water or steam—churches—garages—big houses—schools—and halls.

We co-operate with you and will give you engineering details and service on layout work in connection with any prospects that you may have.

Write for prices and details of THE BEST HEATER on the market today for sturdy, reputable service

Floral City Heater Co.

Chicago Office
1654 Monadnock Building

MONROE, MICHIGAN

BOOMER

that different and better

STEEL FURNACE

WITH the demand for steel air-tight furnace construction the demand for the Boomer has grown.

It has all the usual qualities of high grade steel furnace design and construction *plus the greatly increased radiating surface of three large cast radiating flues.*

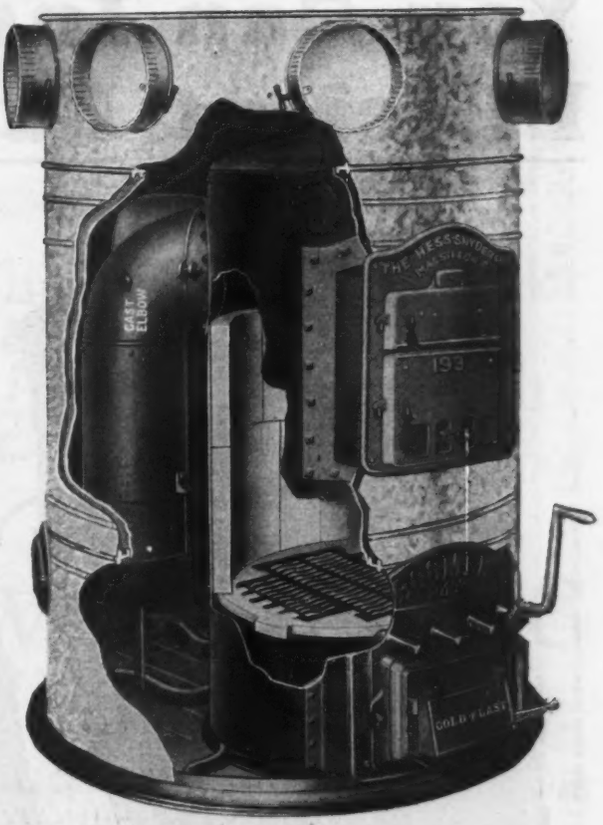
Because of this exclusive Boomer design it is *Soot, Gas* and *Smoke* consuming, making it more efficient and durable.

With the Boomer Steel Furnace your customers are assured of clean heating because of the scientific design of the radiating flues. The proportions cause even temperatures below the point which usually causes great expansion and contraction of cast iron.

It is the ideal furnace for high grade installation at a price that is favorable to customers.

Boomer dealers are having large profitable Boomer Steel Furnace sales.

Write for the BOOMER catalog today

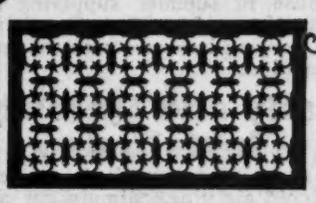


THE HESS-SNYDER CO.-MASSILLON, OHIO.

Ornamental HIGHTON Ventilating

GRILLES & REGISTERS

COMPLETE LINE IN CAST AND WROUGHT METALS



For all grille and register requirements write
Wm. Highton & Sons
Div. Hart & Cooley Mfg. Co.
Nashua, N. H.

No 407 No 576 No 575 No 590

"American Seal"

FURNACE CEMENT

Roof Cement — Stove Putty
Plumbers Putty

PAINTS and SPECIALTIES

WILLIAM CONNORS PAINT MFG. CO.
TROY *Established 1852* NEW YORK

JAMES L. PERKINS
Western Distributor
140 S. Dearborn St., Chicago, Ill.

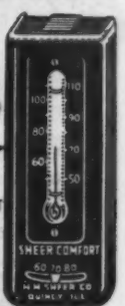
Cut Your Coal Bills

with

"SHEER COMFORT"

Automatic Electric

HEAT CONTROL



Dealer's Price Only

$17.55

Write or Wire

H. M. SHEER CO.
Quincy, Illinois

Dept. AA

Established 1888

Say you saw it in AMERICAN ARTISAN—Thank you!

You Can Install the Most Efficient Furnace Fan

at a Price any furnace owner will pay

Above—the fan blades close when not in use.

Right—the blades open when current is turned on.

Four changes of air Per Hour Throughout the Home or Building

FREQUENT warm air change means a well-heated, comfortable and healthful home. No more sluggish circulation. No more warm ceilings and cold floors.

The Canton Furnace Fan puts pep in a lazy furnace.

It is also used to cool the entire house in summer supplying an abundance of cool, invigorating air, forcing it up through the furnace pipes.

Easily and Quickly Installed

Fan comes already installed in a section of cold air pipe. Simply cut out a short piece of the cold air inlet pipe and insert with a draw band. Then attach with extension cord to an electric socket and start the fan.

Gets Big Furnace Results with small Furnace Costs

LOWER piping cost when a Canton Fan is used and the difference not only pays for fan but there is a profit besides.

Everybody wants a furnace fan. You can cash in handsomely with the Canton Furnace Fan because of its high efficiency and low price. It's the most profitable specialty you have ever handled.

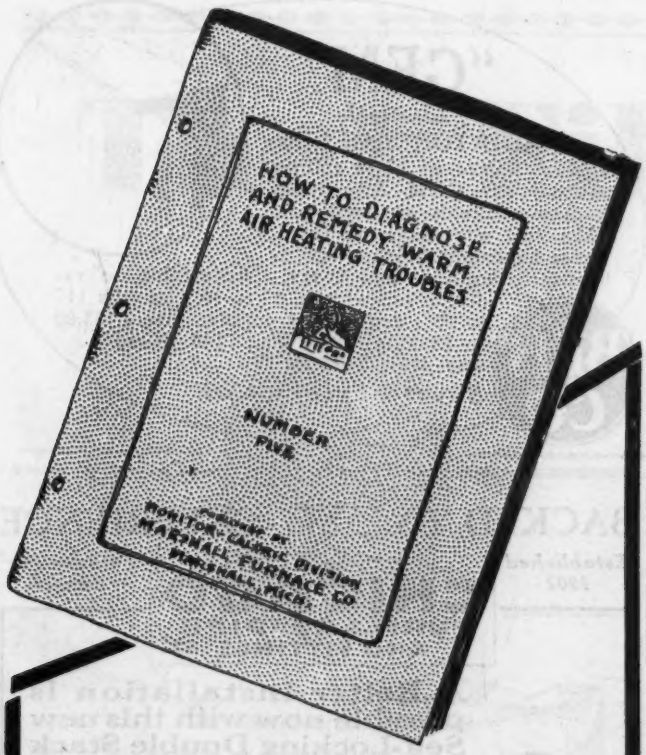
Write today for full information.

Mail a post card today for full details to

The Canton Furnace & Manufacturing Co.

Canton, Ohio

Say you saw it in AMERICAN ARTISAN—Thank you!



HAVE YOU GOT YOUR COPY YET?

EVERY bona fide Monitor-Caloric dealer is entitled to a copy of this new book just off the press on "How To Diagnose and Remedy Warm Air Heating Complaints" and a copy of the others as they come from the press as follows:—

1 *How to Plan a Warm Air Heating System*
2 *How to Sell a Warm Air Heating System*
3 *How to Install a Warm Air Heating System*
4 *How to Conduct the Business End of a Heating Business for Profit*
5 *How to Diagnose and Remedy Warm Air Heating Troubles.*

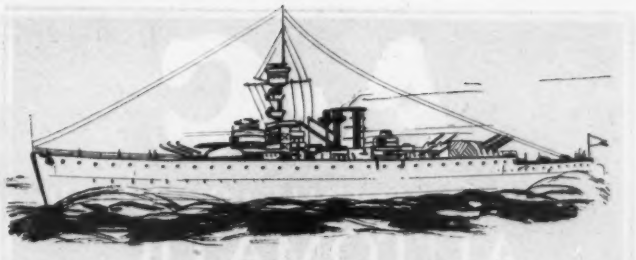
CALORIC

These books were written as simply, clearly and concisely and as free from technical matter as was humanly possible, by men who have spent a lifetime in the heating business and each is complete in itself but each is punched for ring binder so that when all are assembled it will consist of a complete library covering all phases of wram air heating.

Produced and published free for Monitor-Caloric Dealers only.

Repairs for all old model Monitor products.

MONITOR-CALORIC DIV.
MARSHALL FURNACE CO.
MARSHALL - - - MICHIGAN



This All Welded Cruiser

Proves — Strength and Leakproof qualities of—

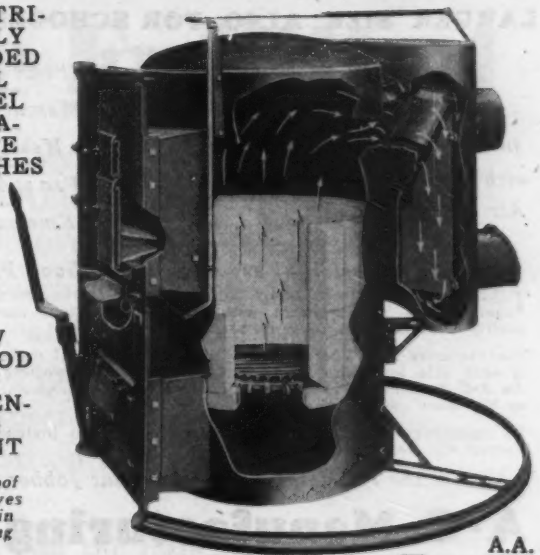
WELDING

(THE above sketch is that of the new 10,000 ton Super-Cruiser, Von Spee, recently launched by Germany. It is reported to cost around $20,000,000 and has a cruising radius of 10,000 miles at 20 knots. The plates are Welded instead of riveted, saving nearly 1000 tons in weight.)

Expert all welded construction is a feature of the—

COL-BURN HEATER

ELECTRICALLY WELDED ALL STEEL SEPARATE POUCHES



NEW METHOD OF FASTENING FRONT

Leakproof and Saves Time in Erecting

WIN your fight for more business with the WELDED COL-BURN HEATER. *Just send the coupon today—*

COL-BURN HEATER CO.
Division of
ENTERPRISE BURNER AND TANK WORKS
1955 N. Long Ave.,
CHICAGO, ILL.

A.A.
Col-Burn Heater Co.,
1955 N. Long Ave., Chicago.

Gentlemen: I am interested in the Improved Col-Burn heater. Send me complete details and prices.

Name .....
Address .....
City ..... *State* .....

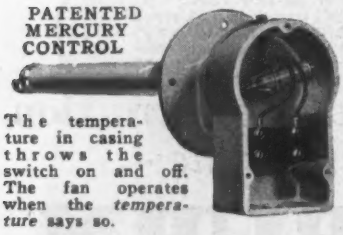
A-C

(THERMOSTATICALLY CONTROLLED)

AUTOMATIC FURNACE FAN

THIS is the fan they are all talking about—the fan that is the sensation of modern warm air heating—*truly automatic.*

PATENTED MERCURY CONTROL



The temperature in casing throws the switch on and off. The fan operates when the *temperature* says so.

The Only One of its kind

Thermostatic Control Warm Air Furnace Fan licensed under Re. Pat. No. 15531, can be used only by the A-C Mfg. Co. of Pontiac, Ill.

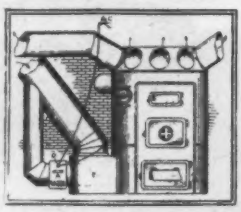
COMPLETE TO THE DEALER AT —

$37.50 This is our No. 9 Fan. Unit having 10 inch outlets and inlets. This number is the size for the smaller homes.

$50.00 No. 12 Unit is of a larger size having 14 inch inlets and outlets and is designed for the larger homes.

LARGER SIZE ALSO FOR SCHOOLS, ETC.

Operates Efficiently in Connection with Any Warm Air Installation



Price Includes

Mercury Control

Heat Booster

Fan and Fan Unit

Emerson Motor

Easy to Install—Easy to Sell at a Good Profit

THE A-C is simple in design and most efficient in operation. It is quiet, does not interfere with gravity operation, made of high quality materials and needs no attention from user.

The *exclusive A-C Thermostatic Control* feature will make it an item of easy sale for you. Folks want it—dealers everywhere are selling the A-C on demonstration. No back drafts, no whirlpools, no louvers, no big labor cost to install.

Its economical cost makes it possible for you to include *Automatic Forced Air Heating* on your *bids.*

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Adjustable

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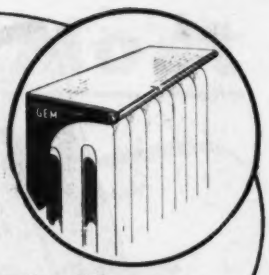

Several weeks of good selling weather for GEM Adjustable Radiator Shields are still left. Take full advantage of them. Three handsome finishes—gold-bronze, aluminum and ivory. Adjustable to radiator top widths, 6" to 13", lengths 11" to 65", and sell at popular prices, $5.00 to $8.00. Beh & Co., 1140 Broadway, New York, N. Y.

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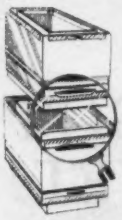

A Better Installation Is possible now with this new Self-Locking Double Stack

CHICAGO Pipe has been the choice of thousands of furnace men for over 26 years—now this improved pipe represents *extra* value—the result of experience and modern manufacturing methods. It clicks together quickly and easily—stays together and makes a stack of unequaled strength.

Ask about it now—write for our Catalog No. 21—on Chicago Pipe and all Furnace Supplies

CHICAGO FURNACE SUPPLY CO.
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BOLTS

WE MANUFACTURE A COMPLETE LINE OF BOLT PRODUCTS, INCLUDING STOVE BOLTS, CARRIAGE BOLTS, MACHINE BOLTS, LAG BOLTS, NUTS, COTTER PINS, ETC. ALSO STOVE RODS, SMALL RIVETS AND HINGE PINS. CATALOG ON REQUEST.

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PATTERNS

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IRON AND WOOD

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QUINCY PATTERN COMPANY
QUINCY, ILLINOIS

They Fill the Bill

Fred R. Dowsett
Vice-President and General Manager

To give the values represented by the Round Oak Line today, has meant a total reorganization of manufacturing methods.

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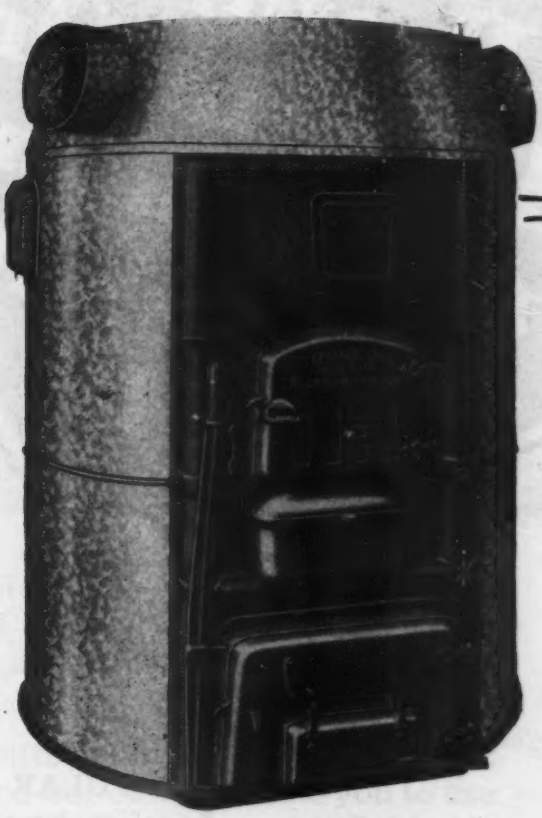


Every Promise Fulfilled

"Handsome is as handsome does" is the keynote of the selling appeal today. To attain sales supremacy, VALUE measured by *both* beauty and performance must be given in overflowing quantity.

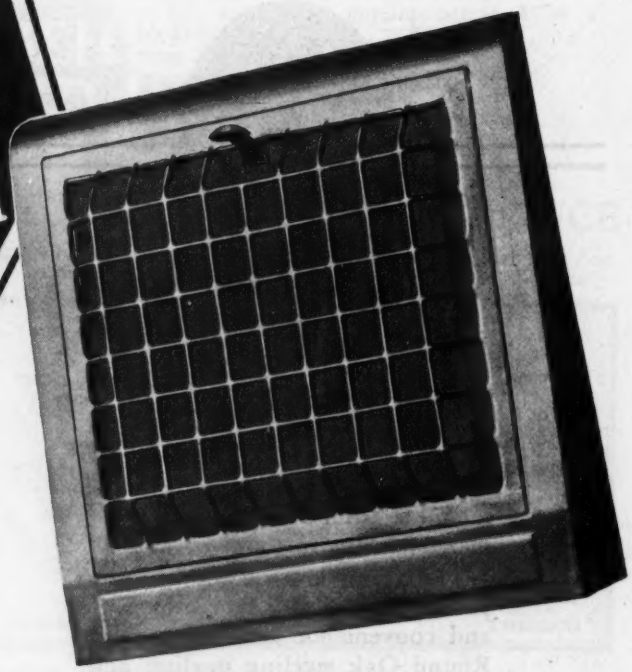
Round Oak promised its dealers to give them this Sales Mastery in the **NEW ROUND OAK** Line—and they have come through 100 per cent. The new line fulfills the bill of MODERN MERCHANDISING NEEDS in every respect. Every promise has been fulfilled. Here is the marketing attraction that surpasses all previous standards.

Write for particulars of the New Line and the franchise that puts you in the real profit line.

THE BECKWITH COMPANY, Dowagiac, Mich.

"Round Oak Folks" Established 1871

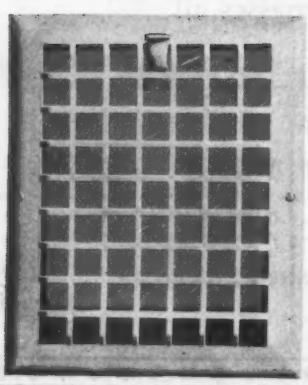
Ask for Prompt Shipment On this Popular Register-You'll Get It



POPULAR demand for the complete Walworth line of registers, and this Baseboard Register in particular, has made increased production imperative. With production tooled-up to capacity, shipping and handling facilities greatly increased, you may be sure that your request to "rush" will receive immediate attention.

The Walworth Line of Registers is complete: Baseboard with snap-on Lock-tite Face, one-piece Vertical and Horizontal wall registers and semi-steel floor registers.

Every Standard Code requirement is met to the smallest detail. Every individual item is an expression of conscientious skill and craftsmanship, of Walworth's twenty-one years of continuous register building.

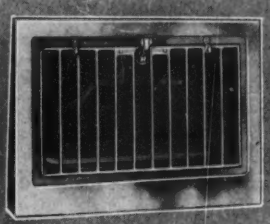


The Forest City Walworth Run Foundries Co.

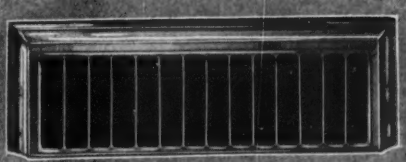
2500 West 27th St., Cleveland, Ohio

WALWORTH REGISTERS

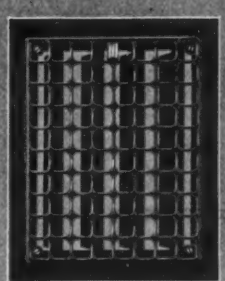
For Every Room—



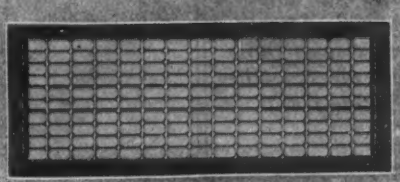
No. 170. Baseboard Register



No. 657. Cold Air Intake



No. 200. Floor Register



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"THE Air Capacity Line" meets the needs of every installer with the right size and style of register for every room.

Our patented pinched-back fretwork and formed-bar design enable you to use smaller H&C Registers and Cold Air Faces than is possible with other makes. This results in a better-looking and more efficient job . . . . greater satisfaction to the customer and more profit for the installer.

If you haven't H&C Loose-Leaf Catalog No. 28, write for a copy today. You will find it very helpful.

New York: 101 Park Ave., Chicago: 61 W. Kinzie St.
Philadelphia: 1600 Arch St.

* *A representative stock of all standard items is carried at our Chicago Warehouse.*

The Air H&C *Capacity Line*

THE HART & COOLEY MFG. CO.
Manufacturers of Registers, Cast and Wrought Grilles and Radiator Enclosures

New Britain, Conn.

Founded 1880

Published to Promote Better Warm Air Heating and Sheet Metal Work

American Artisan

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PITY PROPERLY PLACED

I pity no man because he has to work. If he is worth his salt, he will work. I envy the man who has a work worth doing and does it well. There never has been devised, and there never will be devised, any law which will enable a man to succeed save by the exercise of those qualities which have always been the prerequisites of success—the qualities of hard work, of keen intelligence, of unflinching will.—THEODORE ROOSEVELT.

A Three-Way Service For The Sheet Metal Shop

(1) Offering one of the broadest selection of prime sheets —more than twenty kinds—for immediate shipment. The wide range of sizes and large quantities carried at Ryerson plants assure immediate shipment on every order.

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(3) In addition to the above the Ryerson Machinery division will meet your requirements on sheet metal working tools. Beaders, turning machines, snips, and all other tools—sold under the Ryerson guarantee.

Use this three-way service on all your jobs. Immediate shipment, combining of orders and office work save considerable time and money.

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STEEL-SERVICE

Say you saw it in AMERICAN ARTISAN—Thank you!

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SEAMLESS FURNACE
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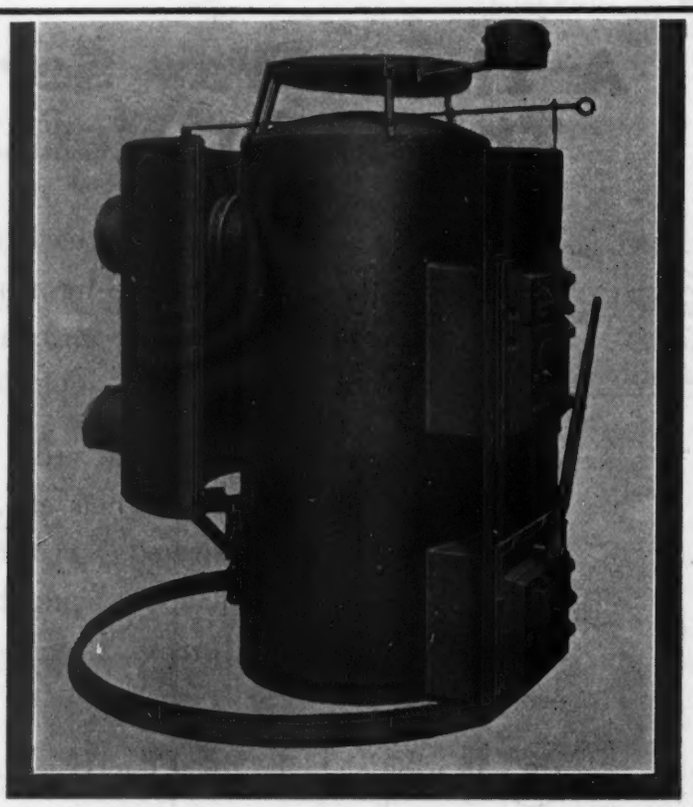

WATERBURY dealers are years ahead of competition. They get the cream of the business, the most profitable installations. They sell the furnace that has led in contributing vast improvements to warm air heating and put it on a higher plane, with the result that ever-increasing thousands are converted to this better method of home heating.

There is no other furnace like the Waterbury. Even the quickest imitators are far behind it. The heavy steel used in the Waterbury is *welded* into one solid, SEAMLESS piece by the dependable oxy-acetylene process. Never will the user be bothered by a whiff of coal gas or a speck of dust. One or two cast iron joints in a furnace are just as objectionable as a dozen. The Waterbury is the only oxy-acetylene welded furnace without any cast iron joints.

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Controlled—gives as much or as little humidity as desired.

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Complete stocks carried in Philadelphia, Pittsburgh, Albany, New Orleans, Kansas City, Denver, San Francisco, Seattle

American Artisan
The Warm Air Heating and Sheet Metal Journal

Vol. 97 CHICAGO, MARCH 9, 1929 No. 10

Michigan Sheet Metal Men Hold Annual Gab Fest in Flint—Much Good Work Accomplished

Hotel Durant Scene of Lively Activity During 3-Day Meet —Summer Outing to Be Resumed—To Detroit Next Year

By George Duerr

MODES of expression are almost as numerous and varied as is human nature itself. Some men give vent to their feelings in music, others resort to athletics to relieve the ennui of their everyday existences. While still others seek the commoner forms of getting rid of their stored up surplus energy, namely, vocal calesthenics (boisterous singing) and the ordinary garden variety of unadulterated comradship, this latter form reaching its most violent form at stag parties.

The boys who are members of the Michigan Sheet Metal and Roofing Contractors' Association and the Michigan Travelers' Auxiliary are past masters in the employment of this last mentioned form of disposing of surplus energy. When they throw a stag party, which they do once a year, the old stag knows he's thrown. He is down—horns, proboscis and rump—nor does he recover for a year's time. He's simply laid out.

Are They Successful in Their Efforts?

The yearly parties of the Michigan boys are unique. Imitators have tried to rival them, but without success. These latter can't even get to first base. In fact, so successful are these Michigan parties that it is with a great deal of reluctance and not a little chagrin that hotel proprietors view the boys' return to any given city. The Michigan boys far surpass any set of college students in the expression of good fellowship.

From this the question arises, and quite naturally, is the association and its auxiliary worth while? Does this association really accomplish anything worth while for its members and for the industry in general? Or does it simply resolve itself into an opportunity to dispose of a lot of spirits (animal and otherwise) for those who attend the convention?

I can answer that question by saying that the Michigan association is by far the most successful organization in the entire sheet metal fraternity, excluding none. It has done more for the individual member and for the industry at large than any other group. Frank Ederle, the secretary, has wrought so well in the building of the organization that several years ago he found it necessary to ask the Board of Directors for an added appropriation of funds with which he might employ an assistant secretary, and the request was quickly granted. While other organizations are debating whether it is an altogether wise move to employ a paid secretary even at this late date, the Michigan men have long since hired an assistant to assume some of the multifarious duties which their regularly paid secretary found weighing down too heavy upon him. Does that look like the organization has descended to the realm of rowdyism? And where does the money come from to pay the secretary and his assistant? you ask. Investigate their methods; you'll find them interesting.

When Good Fellows Get Together

On they came on Tuesday, March 5th, when the convention opened at the Durant Hotel in Flint. The same old familiar faces. Just as at Detroit, at Battle Creek, at Grand Rapids, at Kalamazoo, they trooped in. Harry Rhodes, Frank and Gus Ederle, Bill Busch, Al. Bersbach, Adam Schaefer, and all the rest. Happy and in for a good time.

But we hasten to show some of the things which the association has

OFFICERS ELECTED

The following officers and directors were elected at the Michigan Sheet Metal and Roofing convention:

President, William W. Busch, Detroit.

Vice President, Adam F. Martin, Saginaw.

Treasurer, Homer Brundage, Kalamazoo.

Secretary, Frank E. Ederle, Grand Rapids.

Assistant Secretary, D. H. Ederle, Grand Rapids.

Directors, 1 year, A. S. Albright; 2 years, A. J. Shouldice, William P. Sullivan, and John Ehrhart.

actually accomplished during the year.

Slate, Tile and Built-Up Roofers Have Their Inning

The convention opened officially Tuesday, March 5th. The morning was spent in registration and general confab around hotel lobbies and getting acquainted, meeting old friends and new ones, which to my mind is one of the most enjoyable phases of any convention.

Tuesday afternoon was given over to a slate, tile and built-up roofing conference, a feature that has not been given consideration at other conventions either of the Michigan or other state bodies. Last year the association did bring out a built-up roofing specification book, which is a work of considerable magnitude and worthy of consideration.

A discussion on the reduction of long term guarantees was directed by C. C. James.

"Should the Practice of Subletting Slate and Tile Roofing Labor by the Square Be Discouraged?" was another phase of that business which was given consideration. Discussion on this was led by Wm. P. Sullivan.

"What Material Should Be Used for Surfacing Built-Up Roofs—Slag or Gravel?" was discussed, led by Fred Sherriff.

"What Is the Remedy for Unethical Practices of Some Slate Producers?" created considerable talk, which was led by Wm. W. Busch, resulting in a very profitable afternoon being spent by all attending the session.

(1) Lew Soper, Charlie Nason, Bill Laffin, Jack Stowell, Hugh Doherty, Charlie Siebert and Ed. Dougherty. (2) The Grand Rapids Delegation. (3 Al Bersbach, Bill Busch, Bill Sullivan, Harry Rhodes and Tom Marshall. (4) Glenn Burgess, E. Karer, Jack Bos, Dee Carney, John Bos, E. W. Rowley and I. F. Bourque. (5) C. D. Averill, Frank D. Robert, John E. Behler and H. G. Bullock. (6) Tommy Thompson, Bill Waldron, Art Lamneck, Lee Gillespie and A. G. Schreiner.

Seeing Themselves as Others See Them

Wednesday morning the convention got into full swing. The meeting was opened by A. J. Albright, president of the Flint Sheet Metal Contractors Association, who extended a hearty welcome to all present.

In the absence of President A. J. Shouldice, who is in California enjoying the balmy breezes of the West, Wm. W. Busch, vice-president, succeeded to the duties of acting president. He likewise extended a cordial welcome to all present and thanked Mr. Albright on behalf of the association for the wonderful way in which the Flint boys had prepared the welcome of the association members.

Following these preliminaries a feature of unusual interest was introduced and will be made a permanent part of the regular convention program each year henceforth. Last year at Kalamazoo the association voted a sum of money for the purchase of a moving-picture camera and a projecting machine for use at functions of unusual interest to members, and this projecting machine was brought to the convention this year with several reels of film that had been made at various times during the year.

These pictures were shown during the morning session Wednesday and they created a great deal of interest. Pictures were shown of the Grand Rapids summer outing, the Jackson outing, the Detroit outing, and the trip which a large group of Michigan contractors made recently to the plant of the Central Alloy Steel Corporation at Massillon, Ohio.

In the films of the outings, pictures were shown of the contractors at play, with their wives and children. The trip to Massillon pictured various processes of manufacture which the Michigan standard goes through before reaching the hands of the contractors, taken by the contractors themselves—in a word, the contractors were permitted to see themselves as others see them, and the sight proved highly interesting to everyone.

Stowell Teaches How to Apply Standard Code

Wednesday afternoon Jack Stowell, furnace dealer at Aurora, Illinois, and special representative of the National Warm Air Heating Association, gave a special practical message on how to make better

profits in the installation of warm air furnaces.

Jack opened with a short review of the work which the National Warm Air Heating Association has done during the past twelve years in the way of research and advertising.

Following this up, he made a practical demonstration of the application of the Standard Furnace Code, using charts to illustrate how the heat losses from glass, doors, walls and ceilings is determined. After the heat losses from the building had been determined, the application of the determination of the pipe sizes necessary to make good the heat losses, and the size furnace necessary to generate the heat were explained in rapid succession in a clear, forceful manner, showing how and to what extent the north, northwest, south and east exposures affect the pipe requirements.

A peculiar feature of the type of house figured was that it had one bed room on the second floor, having one exposed wall and two other walls exposed to a cold attic. This proved to be a very interesting case and watched with keen attention.

Lon Shouldice, President of the Michigan Sheet Metal and Roofing Contractors' Association, for 1928-29, was not present at the Flint convention of that organization, he being among those fortunates in the sheet metal business who can avoid the rigors of Michigan winters by ducking off to California. No doubt at the time the convention was in session he was playing golf in the balmy California sunshine.

Bill Busch, Vice President, acted in his stead and vowed that he would even the score with Lon by charging him for his time.

The locating of the cold air returns also proved a subject provocative of much discussion. It was a case of a house divided almost in the middle by a wall having only one door, and that closed most of the time. The fact was pointed out that in this case the general practice would be to put two cold airs of equal size on the job, one on each side of the dividing wall. Such practice, it was pointed out, would be in error, because the one cold air would be overworked while the other would not be loaded to capacity, resulting in a bad situation in balance.

The inference drawn from this situation by Jack was that care must be exercised to see that a proper distribution of the cold air returns is made to insure that all cold airs do their proper share of the work of returning the air to the furnace.

Another point brought out was that where warm air ducts go through a stone wall in the basement an air space of an inch or two should be made to exist between the pipe and the wall to avoid having the cold wall absorb the heat and thus stop the circulation.

The analysis was carried to the determination of the cost of the job, and a short method was given for the figuring of costs and profit. The entire address proved very instructive, and at its conclusion many questions were asked and answered.

Arthur Lamneck, Columbus, Ohio, a member of the Better Business Committee of the National Warm Air Heating Association, strongly urged that all men take what was given them home and put it to practical use in the conduct of their business. Mr. Lamneck's words concluded the program for the afternoon.

Who Put the Overalls in Mrs. Murphy's Chowder?

We certainly must take off our hats to the Flint Local for the splendid entertainment they put on in the evening. It began with a well prepared chicken dinner, served to over 200 sheet metal contractors and salesmen.

(1) Gus. and Frank Ederle, the Assistant Secretary and Secretary of the Association. (2) Bill Sullivan congratulating Bill Busch on His Election to the Office of President. (3) Charlie Glessner, Fred Heads and Ray Bristol. (4) Auxiliary President Gilbert Moore and W. W. Chalk, the Perpetual Secretary-Treasurer of the Travelers' Auxiliary.

Following this the guests were entertained by a well arranged, clean musical show in four acts. This over a four round boxing match provided diversion for a short period, and this was followed by a wrestling match. The athletic portion of the program was provided by the Industrial Mutual Athletic Association of the General Motors organization.

This entertainment was thoroughly enjoyed by everyone present, and the Flint men deserve a lot

A great deal of wholesome entertainment was afforded the convention by the showing of motion pictures taken at the various summer outings of the Michigan sheet metal local associations with a motion picture camera owned by the state association.

The possession of such a camera and projector is an excellent idea and one that could be adopted by other state sheet metal contractors' associations for similar purposes. It helps to bring members into closer contact with each other and the showing of such pictures adds an attractive feature to the annual convention.

of credit for their work in bringing it about.

Michigan Standard Bound to Win

Thursday morning consisted of the business session of the convention. During this meeting the election of officers for the ensuing year took place and resulted as follows:

President, William W. Busch, Detroit.

Vice President, Adam F. Martin, Saginaw.

Treasurer, Homer Brundage, Kalamazoo.

Secretary, Frank E. Ederle, Grand Rapids.

Assistant Secretary, D. H. Ederle, Grand Rapids.

The director appointed for one year was A. S. Albright, Flint.

The directors appointed for two years were A. J. Shouldice, Battle Creek; William P. Sullivan, Detroit; John Ehrhart.

The report of the secretary, which included the financial condition of the association, revealed much progress in the work that the organization has taken upon itself to accomplish. Let it be known that this organization has set out to do certain work for its members and not to save money.

William P. Sullivan had a very interesting report to make on the progress which the Michigan Standard is experiencing. He revealed the fact that all major parts of the industry have now been covered with Michigan Standard, the latest one to be added is the solder connection.

Mr. Sullivan made a strong plea for the members to use Michigan Standard products and in that way help the association to do its work.

A motion to give the Flint local association, the Travelers' Auxiliary Association, the hotel management of the Durant Hotel, and all other organizations or individuals having anything to do with the staging of the convention a hearty vote of

Jack Stowell, Special Representative, N. W. A. H. A.

thanks for the splendid manner in which they did their work.

Association Opposes Subletting of Contract Labor

One subject which appears to have come to be a real problem to the men who do slate, tile and asbestos shingles is the subletting of contract labor by builders. By motion of Homer Brundage the association went on record as being opposed to the practice of contract labor on these items mentioned. The practice consists in selling direct to the owner the materials and then recommending a source of labor to do the work.

Another matter which the association went on record as disapproving was the matter of the manufacturer straddling the fence in certain towns both on furnace and sheet metal products. That is, selling partly to owners in any given city, to lumber yards and also to dealers. It was felt that manufacturers should either deal entirely direct or entirely through dealers.

Contractors Should Remain in Own Territory

Still another matter which was considered of prime importance to the welfare of the industry was that it is considered bad ethics and poor practice for one contractor to go into the territory of another and submit bids. It is generally conceded that the home contractor can do the work at the lowest possible price and when the outsider comes in he simply makes it harder for those in the city. It was the consensus of opinion that before a contractor goes into another man's territory he should at least get in touch with the president of the local association and explain the situation to that individual why he thinks he should have the job. That is the gist of the motion and it passed by unanimous vote. The exact wording of the motion was left to the secretary, who announced that it would be entirely legal when put

Among the motion pictures shown during the Michigan convention was that of a chubby little individual in the person of the sole heir of Gus Ederle, assistant secretary of the association. This small Ederle is a very important personage, even though he is still a babe in arms, because he makes "Our Frank" a granddad, and "Dad" Ederle a great granddad. So you see the Ederles start out being important. It is, therefore, little wonder that they are folks of great importance in later life in the Michigan sheet metal industry. Gus is very proud of his offspring and with good reason.

into final shape. Contractors should look for this transcript in its final form. It is pretty thoroughly understood that there is a gentleman's agreement on this which should be observed.

No Man Will Be Allowed to Attend the Summer Outing Unless Accompanied by a Lady

The matter of the summer outing was taken up and discussed, and it was finally agreed that the selection of the place for the outing, the time and arrangements shall be left to the officers of the association. A warning was broadcast that no man would be allowed to attend the outing unless he is accompanied by a lady. All Michigan men should look forward to further announcements on this also.

Thursday P. M.

C. M. Laux of Lawrence Scudder and Company, Detroit, gave a short talk on "Relation of Capital to Volume of Business."

To illustrate this point Mr. Laux presented the balance sheet of two companies. Copies of this sheet were distributed so the men could follow the interesting analysis.

Mr. Laux showed where a company having too much of their capital tied up in buildings, land, machinery, etc., were not in a position to take on as much additional business, as their capital would ordinarily indicate, because of the fact that much of this capital could not be listed as quick assets.

	A. B. C. Company	%	X. Y. Z. Company	%
Sales of completed contracts	$180,000.00	..	$ 80,000.00	..
Cash advances received on work in process	24,000.00	..	10,000.00	..
Balance due upon completion of work in process	12,000.00	..	9,000.00	..
Cost of completing work in process	10,000.00	..	7,000.00	..
Present work in process must be completed within	30 Days		30 Days	
Present accounts receivable all collected within	30 Days		30 Days	
Assets				
Current Assets				
Quick Assets				
Cash	$ 10,000.00	10	$ 2,000.00	4
Accounts receivable	20,000.00	20	10,000.00	20
Total quick assets	$ 30,000.00	30	$ 12,000.00	24
Working Assets				
Contracts in process	$ 20,000.00	20	8,000.00	16
Stock inventory	15,000.00	15	7,000.00	14
Total current assets	$ 65,000.00	65	$ 27,000.00	54
Fixed Assets				
Land, buildings and machinery	$ 30,000.00	30	$ 20,000.00	40
Delivery equipment	5,000.00	5	3,000.00	6
Total assets	$100,000.00	100	$ 50,000.00	100
Liabilities				
Current Liabilities				
Notes payable	$ 10,000.00	10	$ 7,000.00	14
Accounts payable	10,000.00	10	5,000.00	10
Total current liabilities	$ 20,000.00	20	$ 12,000.00	24
Mortage payable	$ 20,000.00	20	12,000.00	24
Capital stock	50,000.00	50	25,000.00	50
Surplus	10,000.00	10	1,000.00	2
	$100,000.00	100	$ 50,000.00	100
Inventory of Investment Ratios				
Ratio of annual sales to inventory	$12.00 to $1.00		$11.00 to $1.00	
Ratio of quick assets to current liabilities	1.50 to 1.00		1.00 to 1.00	
Ratio of current assets to current liabilities	3.25 to 1.00		2.25 to 1.00	
Receivable Investment Ratios				
Ratio of annual sales to receivables	$ 9.00 to $1.00		$ 8.00 to $1.00	
Ratio of quick assets to current liabilities	1.50 to 1.00		1.00 to 1.00	
Plant Investment Ratios				
Ratio of sales to fixed assets	$ 6.00 to $1.00		$ 4.00 to $1.00	
Ratio of net worth to fixed assets	2.00 to 1.00		1.35 to 1.00	
Capitalization Ratios				
Ratio of sales to net worth	$ 6.00 to $1.00		$ 3.00 to $1.00	
Ratio of net worth to total liabilities	1.50 to 1.00		1.08 to 1.00	

Questions

Based on above facts how much additional business can the above companies carry in process without embarrassing their present financial position?

Can either of the above companies economically carry a $75,000.00 contract?

What is wrong with the X. Y. Z. Company's Financial Structure as compared to A. B. C. Company?

Is the X. Y. Z. Company a good credit risk for additional loans?

The answer to the first question is: The A. B. C. Company could take on about $30,000 to $35,000 more business. The X. Y. Z. Company could take on about $17,000 more business.

Answer to second question: It is possible for the A. B. C. Company

W. P. COOKE DIES

W. P. Cooke, President of the Floral City Heater Company, Monroe, Michigan, and for many years Treasurer of the National Warm Air Heating Association, died suddenly and was buried this week.

Mr. Cooke was very well known in the warm air heating industry and was one of the prime movers of the research work and also association work. A complete survey of Mr. Cooke's life will appear next week.

to take it on because they have about $35,000 to carry on business with. Not possible for the X. Y. Z. Company because it has only about $9,000 working capital.

Answer to third question: Too much tied up in buildings, etc.

Answer to fourth question: No, not enough quick assets.

The second speaker of the afternoon was Mr. J. T. Hay, Metallurgical Engineer of the Central Alloy Steel Corporation, Massillon, Ohio, who spoke on "The Twentieth Century Method of Combatting Corrosion."

Mr. Hay stated that he believed that Alloy steels were truly the twentieth century method of combatting corrosion. True alloys, he said, formed entirely new materials having peculiar properties for resisting corrosion not embodied in any of the separate metals used in the making of the alloy. Rust, Mr. Hay stated, is found only on iron—all other metals corrode.

The making of an alloy, he said, not only required the same care and skill in manufacturing an ordinary iron, but more care. Iron containing point 20 manganese is good iron. Purity much beyond this puts too much oxygen in the iron and while making purer iron it would not be as durable or lasting.

Mo-Lyb-Den-Um iron, he said, contained point 25 manganese point 40 copper and point .05 Mo-Lyb-Den-Um.

Mr. Hay stressed the point that the adding of copper and mo-lyb-den-um did no good unless the heat of iron is proper in all respects. This care in manufacturing and the alloy makes a metal he stated that is extremely ductile and especially corrosion resistant at the bends.

The third speaker was Mr. N. J. Biddle, General Manager, Allied Construction Industries of Detroit.

His subject was, "The Allied Construction Industries Program of Credit." The purpose of all organization, Mr. Biddle said, was for protection. The purpose of any association, he said, was to do a job of some kind and carry it through and then start on another one.

Many problems are present at all times in all industries and many of these industries overlap so that one industry or one branch of an industry could not hope to solve these problems.

Much experience in Association work, Mr. Biddle said, had shown him that most trouble is loose credit or lack of proper credit. Credit in the sheet metal and furnace industry is an industry problem and not confined to one trade.

The body known as the Allied Construction Industries of Detroit, whom he represented, is organized, he said, to establish proper credit control which works for the betterment of an entire industry and the individual contractors, store operators, etc.

Mr. Biddle explained at some length the workings of the body and told how in the electrical field it cleaned things up in such fine shape that all now engaged in all of its branches make more money.

Competition today, he said, is keener than ever before. Outlets for merchandise will be found at all costs and it has come to pass that today in many cases terms are being sold instead of merchandise

Even affiliated groups now make up the organization, and many Detroit banks are members of the Financial Dvision. Much interest was shown by the members and it was shown that the volume of business a contractor may do does not work to his disadvantage. The smaller contractor is as well served as the larger contractor.

Following Mr. Biddle's talk, Mr. Al Galley of the International Nickel Company showed slides illustrating much of the company's advertising matter and explained to the men how the large amount of national trade paper and direct mail advertising was directing business for Monel Metal to the sheet metal contractor.

Al Bersbach made an announcement on behalf of the Summer Outing Committee to the effect that the Outing will be held at Millers Flats near Detroit on the St. Clair River.

Following this moving pictures of an interesting hunting trip were shown and then President Bill Busch adjourned the meeting until next year.

The Michigan Association this year adopted the practice of giving prizes for attendance at convention sessions. In order to be eligible each man must give evidence that he was in the meeting at a certain hour and also that he was present at the close of that particular meeting. This plan has been worked with good success by many associations and appears to be an added incentive for attendance at all sessions of the convention.

In drawing plans for a warm air heating plant, much time can be saved when it is found necessary to refer back to the plans if the glass area in square feet of the window casement openings and outside doors, and the required pipe area of each room is placed on the plan itself at the time that the Standard Code requirement sheet has been filled out.

When this is done, it is not necessary, when referring back to the plan, to dig out the entire sheet of figures, as the information sought will then be found right on the plan itself. This is one of the many pointers that Jack Stowell brought out in his talk.

Michigan Travelers' Auxiliary Holds Annual Meeting and Banquet

At 10:30, Thursday morning, all the boys with the red badges, which signified their membership in the Michigan Sheet Metal Contractors' Traveling Salesmen's Auxiliary, gathered to hold their 19th annual meeting.

Promptly at 10:30 President Gil-

bert Moore banged the gavel and opened the meeting. He stated that he was thankful for the large gathering and also for the splendid cooperation which the boys had given him during his year as president.

The big job, he said, was immediately turned over to Bill Amelung, and that taken care of, he had no difficulty whatever in running his office of president.

Mr. Moore said that Mr. Amelung as Chairman of the Entertainment Committee deserves all the credit in the world for successfully arranging matters for the entertainment of the sheet metal contractors.

W. W. Chalk, Secretary-Treasurer, was called on to read the last report. This report was accepted and Mr. Chalk was congratulated for so ably handling his office.

A telegram was read from James Eisman, stating that he was unable to appear as Mr. Cooke of his company had died suddenly.

Harvey Manny made a motion that a telegram of condolence be sent to the family of Mr. Cooke.

The next communication was a letter from Ralph Blanchard, one of the charter members of the Auxiliary. Ralph's letter was certainly very fine, and Harvey Manny again was first on his feet with a motion. The motion was that Fred Heads be instructed to tell Ralph Blanchard to hereafter map his trips so that he will be able to attend the convention.

President Moore instructed Secretary Chalk to answer Mr. Blanchard's letter.

The next report was that of the Entertainment Committee. Bill Amelung, chairman of this committee, told of the splendid arrangements they had made for the evening entertainment.

The next report was that of the Auditing Committee, and Hugh Doherty, chairman of this committee, reported that they had examined the books and found them correct.

Brig Young, chairman of the Membership Committee, reported an increase of seventeen new members. The new members were asked to stand and be introduced.

A motion was made to extend a vote of thanks to Mr. Young for his good work in bringing in so many new members. This motion, however, was voted down on the grounds that Mr. Young had little or nothing to do with getting new members.

Under the head of new business, Mr. Alfred Green made a suggestion that inasmuch as the treasury showed a very healthy balance, this fund be used to send out letters soliciting new members and also in sending letters to sales managers or other executives of companies having men traveling in Michigan, acquainting them with the purposes and the exact benefits their salesmen may derive from being members of the Auxiliary.

Ed Root, for the benefit of new members and in support of this motion, told of the help to the salesmen of the Roster List. Harvey Manny, also supporting the motion, outlined the history of the Auxiliary, and stated that any sales manager knowing the true purpose of the Auxiliary, would certainly see to it that his traveling men carried memberships.

The next was the report of the Nominating Committee, of which William P. Laffin was the chairman. Mr. Laffin, however, had forgotten that he held this important office, and so his lack of report was excused and he immediately retired to the lobby with the other members of the committee and returned in a few minutes with their selection.

Their slate, however, carried only one candidate for each office, and this was strenuously objected to by a number of the boys who stated that a contest must be held. Harvey Manny, one of the objectors, said he not only objected but was entirely "regusted."

The fine spirit and fun of the Michigan Auxiliary is always well displayed in the election of officers.

To oppose Fred Bishop for President, the regular organization candidate, Lee Gillespie nominated Bill Amelung.

The candidates for the office of Sergeant-at-Arms were Lee Gillespie, Dave Farquhar, Harvey Manny and Bill Amelung. Just as the voting was about to take place, Frank Ederle appeared, and the meeting was suspended for a few minutes to hear a word or two of greeting from the Association Secretary. Mr. Moore responded.

After all the contest it developed that the original slate selected by Bill Laffin and his committee was elected, as follows: Fred Bishop, President; Brig Young, Vice-President; W. W. Chalk, Secretary-Treasurer; Bill Amelung, Sergeant-at-Arms.

Gilbert Moore installed the new officers and the meeting was adjourned.

The evening entertainment and banquet was one of the best ever held. Bill Amelung was toastmaster, and he handled the job excellently.

The Wolverine Quartette rendered songs between selections by the orchestra.

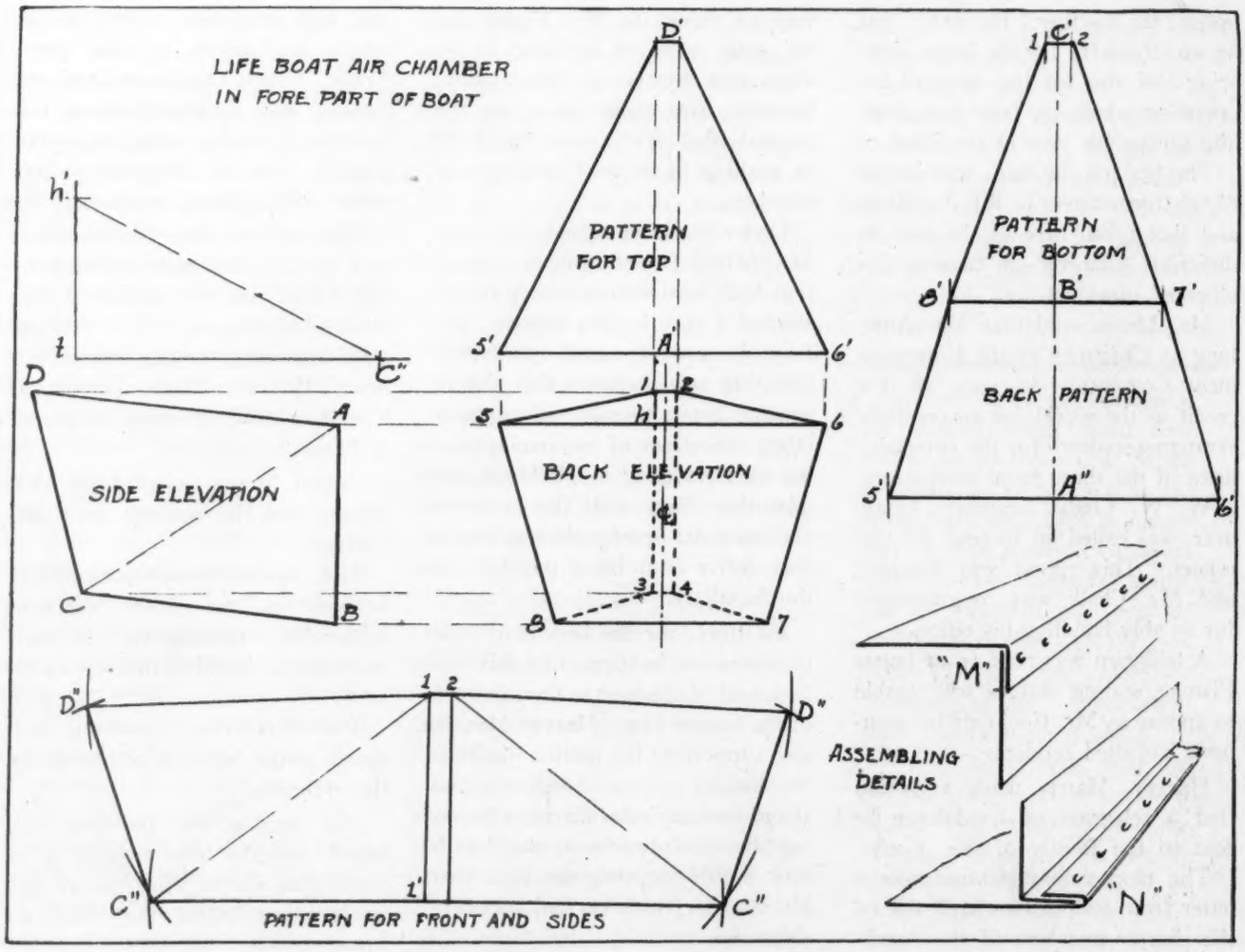
The singing was the best ever heard, and the boys enjoyed it so much that encore after encore had to be given before they were allowed to rest.

The speaker of the evening was Dusty Miller of Wilmington, Ohio, a newspaper publisher, who got right in solid with the boys on the jump. Dusty Miller had a way all his own—no speechmaking, but an uproaring friendly chat that kept the men on edge to get every word of wisdom and wit, of which he had plenty in store.

Prest-O-Lite Chain Locates 39th Plant at Houston, Texas

The thirty-ninth acetylene gas plant of the Prest-O-Lite chain, located at 925 Hughes Street, Houston, Texas, started operations February 2, 1929, and will supply dissolved acetylene for welding and cutting to local industry.

A. J. Harrower is superintendent of the new plant, and H. F. Sautter, whose headquarters are at the Dallas Prest-O-Lite plant, is district superintendent.



Patterns for Life Boat Air Chambers

Constructing Pattern for Life Boat Air Chambers of Galvanized Iron

Chambers Constructed for Front, Rear and Two Sides

By O. W. Kothe, Principal, St. Louis Technical Institute

IN THESE days of fast transportation, especially on land and air, greater movements are afoot for more speed on the water—there must be more safety precautions provided on the ordinary boats used for motor purposes. So in the front and rear of the boat and sometimes along both sides of the boat galvanized iron tanks or boxes are built to hug the hull of the boat and so provide air chambers. If the boat capsizes or if a leak develops, the air chambers are supposed to have enough buoyancy to prevent a crew from sinking.

The number of air chambers in a boat is naturally governed by the number of people that ordinarily ride in the boat—so that an average weight of the occupants can be determined and their total weight figured as water displacement, giving some allowance on the side of safety. Boats or air chambers will support the weight of water that they displace. So that a tank which will displace a hundred pounds of water will support that much weight before it will sink. If more weight is added then naturally the tank is forced into the water, and if less weight is added then the tank has some margin of safety in support of the weight to prevent it from sinking.

So here we have a drawing of the front part of a boat of how air chambers are made to fit in along the hull and the nose of the boat. By inspection of the side elevation also the back elevation the general appearance can be readily understood. In developing the pattern for the top we pick the girth as slope line A-D from side elevation as A′-D′ of back elevation. Then we project lines and develop the pattern

as shown. The same process is followed with the pattern for the back and bottom, where the back pattern is merely a reproduction of the back elevation. Sometimes the bottom B-C has a different slope than the slope A-D and in that case each line must be picked separately and developed.

The sides offer the most difficulty since there is a sort of flare there which none of our elevation lines give in a true position. Hence we must use triangulation. Draw the right angle diagram as h′-T-C″ with dividers pick the off-set h-5 from back elevation and set it as t-h′, then pick the side elevation line A-C and set as t-C″; then line C″-h′ will be the true length. To develop the pattern for the sides or reproduce the front equal to the length of C-D of side elevation. Then pick the line 1-8′ from pattern for bottom and using 1′ in pattern as center, strike an arc as at C″. Next pick the true length h′-C″ and using 1 in pattern as center cross arcs in point C″. Next pick the side line for top D′-5′ and using 1 in pattern as center, strike an arc as at D″, then pick the seam line in the pattern for back as 5′-8′ and using C″ as center cross arcs in point D″. This allows drawing lines through all points where arcs cross and you have the pattern for the bottom, sides and the front. Edges must be allowed which is ordinarily of the riveted type as at "M" for the assembling the top to the sides, while the back is put in as at "N." This makes flush joints on the sides for the top and bottom while the back end is slipped in and riveted and after that all joints are securely soldered so that the tank is perfectly air tight.

Tests should be made by submerging these tanks under water or else putting the tanks under pressure and submerging them to see that air bubbles develop. Leaky tanks are no good as life preservers because tanks that fill with water will sink. On many of the old boats sheet metal shops could develop quite a bit of work in making tanks since such equipment will rust through and is not taken care of so that every few years some repairs are needed. Shops that are awake to this opportunity can drum up considerable work in every locality where pleasure boats are a part of the recreation of the people.

Inland Steel Enters Expansive Building Program

Inland Steel Company this week announced a building program for this year which includes a 10-inch bar mill, a six-story office building, and a new jobbing mill, all of which are to be built at the Indiana Harbor, Indiana, works.

The bar mill will be a combination continuous and cross country mill and will be built on the lake front adjacent to the company's 14-inch bar mill.

The office building will be situated across the Indiana Harbor Belt Railroad tracks, east of the plant. It will include the offices of the general superintendent the purchasing department, the mill accounting department, the paymaster's department, the engineering department and the drafting rooms.

The new jobbing mill will be located in the present sheet mill department and will roll sheets up to 72 inches wide.

No contracts have been let for this work but it is expected that all arrangements will be made within the next few months, and the work completed by the end of the year.

The company is also building seventy-four Becker type Koppers coke ovens at this plant, which are already under construction.

Otto Bernz Gasoline Torch

From Walter H. Ziegler, 207 North Hackley Street, Muncie, Indiana.

Can you tell me who makes Otto Bernz gasoline torches?

Ans.—Otto Bernz Company, 17-37 Ashland Street, Newark, New Jersey.

"Tylac" Tile

From Fairfax Heating Company, 525 West 103d Street, Chicago.

Can you tell us who makes "Tylac"—a tile for interior work?

Ans.—Tylac Corporation, Builders' Building, Chicago.

Lithographed Plate

From Weissmiller, Armstrong, Geniessee Company, 155 North Pearl Street, Green Bay, Wisconsin.

Where can we buy lithographed plate 22 gauge in sheets 24 by 30 inches, in golden color.

Ans.—McVoy Sheet and Tin Plate Company, 1042 West 36th Street, Chicago.

Used Machinery

From The Wade Furnace Company, 622 Broadway, Cincinnati, Ohio.

Can you tell us where we can buy used machinery for making fittings?

Ans.—Interstate Machinery Company, 100 South Jefferson Street, and Maplewood Machinery Company, 2638 Fullerton Avenue; both of Chicago.

"Yankee" Dampers

From Carr Supply Company, 414 North Dearborn Street, Chicago.

We would like to know who makes "Yankee" dampers.

Ans.—S. M. Howes Company, 42 Union Street, Boston, Mass.

Mask

From Floydada Tin Shop, P. O. Box 581, Floydada, Texas.

We should like to know who makes a mask that will prevent a person from inhaling the fumes of muriatic acid while using it to solder with.

Ans.—Bullard-Davis, Inc., 506 South Wabash Avenue, and Improved Aluminum Gasco Protector Company, 7216 Ridge Avenue; both of Chicago.

Square Window Ventilators

From Joseph Lassick and Company, 1609 West 19th Street, Chicago.

Can you tell us who makes the square window ventilator on a metal frame with aluminum shutters?

Ans.—The Emerson Electric Manufacturing Company, 806 West Washington Boulevard, Chicago.

Cast Iron Smoke Pipe

From O. M. Dodd, Lebanon, Indiana.

Please advise me who makes cast iron smoke pipe.

Ans.—Waterloo Register Company, Waterloo, Iowa.

Thermal Insulation—Its Effect Upon Heating Costs in Residence Work

Giving Tables of Thermal Conductivity of Materials of Different Kinds

THE following is Letter Circular *227* of the Department of Commerce, Bureau of Standards, at Washington, D. C., dealing with Thermal Insulation, and should prove of great interest to warm air furnace installers.

It was prepared to assist in answering the numerous requests for information and data on the subjects of thermal insulation and insulating materials, primarily with reference to buildings.

"The Bureau has just completed a series of determinations of the heat conductivities of a large number of commercial insulating materials used at ordinary or slightly elevated temperatures. A similar series was made a number of years ago, but a number of new materials have appeared on the market since that time, and the properties of some of the older materials have been slightly changed. The method of measurement, together with the results of the former series of tests, was described in the October, 1920, number of the Journal of the American Society of Heating and Ventilating Engineers.

"The heat conductivity of a material is a measure of the insulating value of that material; the lower the conductivity the greater the insulating value. Obviously the best conductor of heat is the poorest heat insulator. The customary measure of the conductivity of a material is the amount of heat in Btu (British Thermal Units) which will flow in one hour through a layer of the material one square foot in area when the temperature difference between the surfaces of the layer is 1° F. per inch of thickness.

"The thermal conductivity is a property of a material itself and does not depend upon the size or shape of a particular piece of the material in question. The insulating value of a layer of material of any thickness depends upon the thickness as well as upon the thermal conductivity of the material of which the layer is composed. In general the insulating value, i.e., the resistance to heat flow, of a flat layer of any material is equal to the thickness of the layer divided by the thermal conductivity of the material of which the layer is composed.

"The same principles are involved in what is sometimes called 'insulation against cold' as in 'insulation against heat.' The only difference is the point of view with regard to the direction of heat flow. The insulation of a building against the outside cold is merely a question of reducing the heat flow from the inside to the outside. The insulating value of a material depends somewhat upon the temperature of the material, but this effect is small over the small temperature ranges occurring in buildings. The same layer of material would be somewhat more effective as house insulation than as oven insulation.

"Table 1 of this circular gives the thermal conductivities and weights per cubic foot of various materials which have been tested at the Bureau. The weights do not include the paper or other coverings confining loose materials. Table 2 is a more practical table for general use. It gives the conductances of commercial thicknesses of various materials, and in another column gives the insulating value of the commercial thicknesses. The insulating value is merely the reciprocal of the conductance, in accordance with the definition of insulating value previously stated, viz., the thickness of the material divided by its thermal conductivity. The weights per square foot given in Table 2 include the surface coverings, if any are present. In all cases the tabulated values are the average of tests on a number of samples of each material. Since materials of this general class are not very uniform, differences in conductivity amounting to one or two in the last figure have no particular significance.

"The figures in both tables correspond to an average temperature of 90° F., e.g., 110° F. on one surface of the insulating layer and 70° F. on the other. At lower temperatures, corresponding more nearly to actual conditions in practice, the conductivities are a few per cent lower. For practical comparative purposes, the values at 90° F. are sufficiently good.

"Tests were made at average temperatures higher than 90° F. and the change in conductivity with temperature thus determined over a limited range, but the results of these tests have not been included in this circular since they are not particularly significant. The average increase in the conductivity of the various materials with increase of temperature was found to be about 0.18 per cent per degree F.

"Examination of Table I will show that the differences in the respective heat conductivities of the various light fibrous or cellular insulating materials are not very great. Of the better insulators (K less than 0.4) one and one-half inches of the poorest material is equivalent to one inch of the best. By far the greater proportion of the material listed fall well within these limits. In general, the lighter the material per unit total volume, the better is its insulating value per inch of thickness. Stiff fibrous insulating boards having considerable structural strength are somewhat poorer insulators than lighter and looser materials. Heavy wall boards containing plaster in one form or another are relatively poor insulators,

although they are very useful building materials and are undoubtedly valuable in retarding infiltration of air through the wall.

"From the point of view of insulation only, the most important question is the thickness of insulating material to be applied, rather than what material to select, provided the choice is restricted to the class of cellular or fibrous materials. No known material in a very thin layer can be expected to provide an appreciable amount of insulation. On the other hand, a relatively thick layer may not be economical, since relatively little additional gain is made over some layer of intermediate thickness. The selection of a material for a particular purpose must be governed largely by the requirements of that purpose in the way of structural strength, cost, fire hazard, etc. The real cost of an insulating material is obviously not the cost per square foot of commercial thickness, but rather the cost per unit insulating value of the commercial thickness.

"If a layer of insulating material is added to a wall, the insulating value of the wall will be increased by an amount equal to the insulating value of the layer of material added. The thicker the layer, the greater will be the insulating value of the resulting wall. The percentage increase in the insulating value of the wall, however, will depend upon the original insulating value of the wall without insulation. The percentage increase in the insulating value of an actual wall containing windows will also obviously depend upon the amount of glass surface and the air leakage around windows and doors, since these factors are unaffected by the addition of insulating material.

"A great many types of walls and roofs are to be found in present day dwelling house construction. The insulating value of one type or individual may be considerably different from that of another, but in an actual building heat losses through and around windows and doors tend to level out the effect of these differences in the properties of the walls themselves to such an extent that there are no wide variations in the amounts of fuel required to heat houses of various types of the same size in the same locality, unless air leakage around windows and doors or through very poorly constructed walls is excessive.

"An estimate of the probable savings in fuel resulting from insulating or weatherstripping an ordinary dwelling house is given in Table 3. The first part of the table gives the fuel saving expressed in per cent of fuel which would have been required for a similar house without insulation or weatherstripping. In the second part of the table the savings are expressed in per cent of fuel required for a house without insulation but with weatherstripped windows. The calculations were based data on heat transfer in building construction taken principally from the "Guide," published by the American Society of Heating and Ventilating Engineers. An average insulating material (K 0.31) is assumed, but no commercial fibrous or cellular insulating material departs far enough from this average value to make a significant difference in the approximate figures in Table 3. Whenever insulation is involved it is assumed that the insulation is applied to both walls and roof, and that the insulation is not substituted for some other member which is present in the uninsulated construction.

"The ranges in values correspond to the extremes in wall constructions usually encountered in average dwelling houses. As a general rule, ordinary walls of solid masonry are somewhat less effective in retarding heat loss than well constructed frame or hollow tile walls. A somewhat greater percentage saving in fuel is therefore obtained by insulating a solid masonry wall than by applying the same insulation to a frame or hollow tile construction. Any house representing a considerable initial investment, particularly one with solid masonry walls, should be insulated, since the cost of insulation is a small proportion of the total, and the resulting additional comfort and fuel saving is considerable.

"It should be borne in mind that any calculations dependent on experimental values of air leakage around windows are subject to great uncertainty on account of the variability of the factors involved. A well built house without weatherstripping may when new show less heat loss by air leakage than has been assumed in calculating the fuel savings given in Table 3. The gain resulting from weatherstripping such a house would be correspondingly less. It should also be realized that infiltration of air is not an unmixed evil since a certain amount of ventilation is necessary. In the ordinary dwelling house air leakage is relied upon to furnish part of the ventilation, and it is unwise to attempt to prevent such leakage altogether. It does not appear, however, that ordinary weatherstripping will reduce the air leakage to an excessively low value.

"The calculations involving insulation are much more definite and certain than those involving air leakage. The application of insulation results in a certain absolute saving which is independent of heat loss through or around windows and doors. The per cent saving of coal, however, is still dependent upon the heat loss through the uninsulated openings.

"If a layer of material is placed in the middle of a wide air space such as that between the studs in a frame wall, greater additional insulating value is obtained than if the material is placed in contact with the sheathing, or as a plaster base, as has been assumed in the calculation for Table 3. In the former case the insulating layer not only furnishes its own insulating value, but in addition divides the air space into two parts, each of which has about the same insulating value as the original air space. The insulating value of an ordinary air space more than about 1 inch in width is equivalent to about ¼ inch of insulating material. The addition of a half-inch layer of insulation in the middle of the air space

in a frame wall is therefore the equivalent of adding about a ¾-inch layer at some other place in the wall. The process of subdivision of an air space, however, can not be carried too far, since the resultant spaces become narrow and are not so effective as insulators. The air space formed by the use of furring strips under plaster or stucco is about as effective as a wider air space, but narrower air spaces than this are less effective.

"Aside from the saving in average fuel consumption and possible increase in comfort, the insulation of a house may allow a smaller initial investment for heating plant. In the extreme case of a structural wall of low insulating value, the addition of insulation may also prevent possible condensation of moisture on the inside surfaces of the external walls. Such condensation is due to the fact that the temperature of the inside surface of a poor wall may fall below the dew point of the air in the room. Decreasing the heat transfer through the wall by the addition of insulation will increase the temperature of t' inside surfaces and thus tend to prevent condensation.

"In summer the effect of insulation is beneficial, but too much should not be expected in this respect. Increasing the total insulating value of a wall or roof will always tend to keep the building cooler during the hot part of the day, but many other factors in addition to the insulating value enter into the question in a rather complicated way. In general, thick masonry walls having large heat storing capacities are better than relatively thin insulated walls. The insulation of roofs is probably much more effective than the insulation of walls, since the former have much greater exposure to the sun."

TABLE 1

Thermal Conductivity of Materials

D = Weight in pounds per cubic foot.
K = Thermal conductivity in B.t.u. per hour, square foot, and temperature gradient of 1° F. per inch thickness. The lower the conductivity, the greater the insulating values.

	D	K
Soft Flexible Materials in Sheet Form		
Dry Zero—Kapok between burlap or paper	1.0	0.24
	2.0	0.25
Cabots Quilt—Eel grass between kraft paper	3.4	0.25
	4.6	0.26
Hair Felt—Felted cattle hair	11.0	0.26
	13.0	0.26
Balsam Wool—Chemically treated wood fibre	2.2	0.27
Hairinsul—75% hair, 25% jute.	6.3	0.27
Hairinsul—50% hair, 50% jute.	6.1	0.26
Linofelt—Flax fibres between paper	4.9	0.28
Thermofelt—Jute and asbestos fibres, felted	10.0	0.37
Thermofelt—Hair and asbestos fibres, felted	7.8	0.28
Loose Materials		
Rock Wool—Fibrous material made from rock; also made in sheet form, felted and confined with wire netting	6.0	0.26
	10.0	0.27
	14.0	0.28
	18.0	0.29
Glass Wool—Pyrex glass, curled	4.0	0.29
	10.0	0.29
Sil-O-Cel—Powdered diatomaceous earth	10.6	0.31
Regranulated Cork—Fine particles	9.4	0.30
Regranulated Cork—About 3/16 inch particles	8.1	0.31
Thermofil—Gypsum in powdered form	26.0	0.52
	34.0	0.60
Sawdust—Various	12.0	0.41
Sawdust—Redwood	10.9	0.42
Shavings—Various, from planer	8.8	0.41
Charcoal—From maple, beech and birch, coarse	13.2	0.36
Charcoal—6 mesh	15.2	0.37
Charcoal—20 mesh	19.2	0.39
Semi-Flexible Materials in Sheet Form		
Flaxlinum—Flax fibre	13.0	0.31
Fibrofelt—Flax and rye fibre	13.6	0.32
Semi-Rigid Materials in Board Form		
Corkboard—No added binder; very low density	5.4	0.25
Corkboard—No added binder; low density	7.0	0.27
Corkboard—No added binder; medium density	10.6	0.30
Corkboard—No added binder; high density	14.0	0.34
Eureka—Corkboard with asphaltic binder	14.5	0.32
Rock Cork—Rock wool block with binder; also called "Tucork"	16.7	0.37
Lith—Board containing rock wool, flax and straw pulp	14.3	0.40
Stiff Fibrous Materials in Sheet Form		
Insulite—Wood pulp	16.2	0.34
	16.9	0.34
Celotex—Sugarcane fibre	13.2	0.34
	14.8	0.34
Cellular Gypsum		
Insulex or Pyrocell	8.0	0.35
	12.0	0.44
	18.0	0.59
	24.0	0.77
	30.0	1.00
Woods (Across Grain)		
Balsa	7.3	0.33
	8.8	0.38
	20.0	0.58
Cypress	29.0	0.67
White pine	32.0	0.78
Mahogany	34.0	0.90
Virginia pine	34.0	0.98
Oak	38.0	1.02
Maple	44.0	1.10
Miscellaneous Building Materials (Data taken from various sources)		K
Cinder concrete		2 to 3
Building gypsum		About 3
Plaster		2 to 5
Building brick		3 to 6
Glass		5 to 6
Limestone		4 to 9
Concrete		6 to 9
Sandstone		8 to 16
Marble		14 to 20
Granite		13 to 28

TABLE 2

Conductance and Insulating Value of Sheet Materials in Thicknesses as Sold

W = Weight in pounds per square foot.
T = Thickness in inches.
C = Conductance in B.t.u. per hour, per square foot, and per degree F.
R = 1/C = Resistance or insulating value.

	W	T	C	R
Soft Flexible Materials				
Cabots Quilt—				
Single ply	0.14	0.35	0.72	1.39
Double ply	0.18	0.48	0.54	1.85
Triple ply	0.31	0.67	0.39	2.56
Balsam Wool—				
½ inch house insulation; smooth paper	0.16	0.55	0.48	2.10
½ inch refrigerator insulation, creped paper	0.24	0.66	0.41	2.47
1 inch refrigerator insulation, creped paper	0.32	1.13	0.25	4.08
Hairinsul—				
75% hair, 25% jute	0.46	0.55	0.49	2.05
50% hair, 50% jute	0.42	0.51	0.51	1.96
Carinsul—Hair felt between asbestos paper	0.58	0.60	0.46	2.19
Salamander—Hairfelt paper, asbestos and cheese-cloth; paper between plys—				
2 ply	0.54	0.61	0.42	2.40
3 ply	0.69	0.70	0.36	2.75
Thermofelt—				
Jute and asbestos	0.42	0.51	0.72	1.39
Hair and asbestos	0.42	0.63	0.45	2.22
Nycinsul—Hair felt between chees-cloth, the latter treated with magnesite solution	0.97	0.45	0.82	1.21
Linofelt—½ inch	0.41	0.67	0.42	2.40
Resisto—Similar of Nycinsul—				
Single	0.56	0.40	0.75	1.34
Double	0.77	0.62	0.49	2.05
Semi-Flexible Materials				
Flaxlinum	0.61	0.56	0.56	1.80
Fibrofelt	0.66	0.58	0.56	1.80
Stiff Fibrous Materials				
Insulite—				
Wall board	0.66	0.49	0.69	1.46
Insulation board	0.80	0.56	0.60	1.67
Celotex—				
Building board	0.58	0.47	0.72	1.38
Railroad insulation board	0.64	0.58	0.59	1.71

Plaster and Wall Boards

Gyplap — Gypsum between layers of heavy paper	2.23	0.50	2.6	0.38
Sheet Rock—Gypsum mixed with sawdust between layers of heavy paper	1.97	0.39	3.6	0.27

TABLE 3

Approximate Fuel Savings in Dwelling Houses

Express in per cent of fuel which would have been required for similar house without insulation or weatherstripping:

	Saving, %
No insulation, weatherstripped	15 to 20
Same, with double (storm) windows	25 to 30
½-inch insulation, not weatherstripped	20 to 30
½-inch insulation, weatherstripped	About 40
½-inch insulation, with double windows	About 50
1-inch insulation, not weatherstripped	30 to 40
1-inch insulation, weatherstripped	About 50
1-inch insulation, with double windows	About 60

Express in per cent of fuel which would have been required for similar house without insulation but with weatherstripping:

	Saving, %
With double windows, no insulation	10 to 15
½-inch insulation only	25 to 35
½-inch insulation, with double windows	40 to 45
1-inch insulation only	35 to 45
1-inch insulation with double windows	50 to 55

Chicago Public Learns 18 Ways to Get Results from Furnaces

Chicago Daily Papers Mentioning Warm Air Heating on Building Pages

THAT the Chicago public is becoming more and more acquainted with warm air heating is evidenced by the fact that the daily papers are beginning to take cognizance of this type of heating system to an ever greater extent in their building pages.

As concrete evidence of what is being done along this line, we reprint an article appearing on the Building Page of the *Chicago Evening Post* under date of February 6, 1929:

"Covering all phases of keeping a heating system in good condition and stoking the heater, the Holland Institute of Thermology has prepared eighteen rules for operating a home-heating plant economically. These rules, which are applicable to any modern central heating plant, are as follows:

"The chimney should be sufficient in height and in area and absolutely tight, with a smooth, round or square flue, straight from top to bottom.

"The smoke pipe should be straight and short, sloping slightly upward to the chimney.

"A shut-off or cross damper in the smoke pipe and check-draft damper beyond the cross damper are required. Use the latter for ordinary daily regulation of the fire.

"There should be an air-slide lift damper or slide in the fire door to furnish oxygen to mix with the volatile gases, but this never should be used to check the fire. All dampers must fit true and be tight.

"With the check draft closed the fire should burn quickly when the draft damper in the ashpit is open. Otherwise the draft is deficient and the chimney should be examined for defects.

"The heater base must be tight and grounded to the floor so that no air leakage into the ashpit can occur. Danger from this source does not occur with a well-made warm-air circulating plant in which the ashpit is one solid cast section.

"Keep all heating surfaces free from soot and fine ashes, and clean out the ashpit daily.

"Grates must be true and not warped, must move easily and have no broken places for coal to drop through. The cone-shaped center-pivotal grate is to be preferred because of its freedom from these defects.

"All basement piping must be covered with suitable insulation.

"If soft coal is used, the heater should be stoked at regular intervals so as to provide for steady moderate combustion. Don't poke or stir the fire from above.

"Keep the firepot full of fuel up to the fire door level. Don't add coal by the spoonful. In mild weather ashes may accumulate on—not under—the grate. Don't shake grates too long and hard. Remove clinkers with as little disturbance to the fire as possible. Shake fire before you add fresh fuel.

"Don't let the fire burn too thin. Try to anticipate heating demand by firing the heater at the onset of a cold wave.

"If your heater is too small for your home, use large-sized coal. Small-sized fuel can be used advantageously only if the heater is ample in size and you can give close attention to the fire. The way to be sure your furnace is of the right size for your house is to have it installed by a manufacturer who maintains a genuine engineering service.

Avoid Overdry Heat

"Thermostatic or other automatic damper control is a great aid to economy.

"Keep the temperature down to 70 degrees with a relative humidity ranging around 40 per cent.

"Keep a uniform temperature throughout the house, not allowing the rooms to cool more than 10 degrees at night.

"Weather strips or storm sashes, at least on the west and north sides, are a genuine economy.

"Your central heating plant, and the whole system as well, must be kept in first-class condition. It is cheaper to have defects repaired than to overcome them in operating the heating system. All ducts, registers and other parts must be kept scrupulously clean and free from dust, cobwebs and other accumulations."

Fraser Gas Furnace Co. Plans Building Construction

Fraser Gas Furnace Co., 445 South San Joaquin street, Stockton, Calif., plans the construction of a one-story plant on Fremont street. R. P. Morrell, Mall building, is architect.

RANDOM NOTES AND SKETCHES

Fred Gottschalk, Chicago representative of the Premier Warm Air Heater Company, Dowagaic, Michigan, was in our office on Monday of this week. Fred's object in coming in was to pay his subscription, so he said. But regardless of this we were very glad to see him and hope he won't hesitate to drop in again any time he finds it convenient. And, by the way, I had the pleasure of shaking hands with Dick Judd of the Premier organization at the Michigan convention. Dick made known the fact that he was somewhat chagrined that a few weeks ago I had sprung a little joke on him which he feels gave the impression that he is a poor dancer. Now Dick prides himself on his dancing and with good reason I have no doubt. Therefore it is up to me to retract, which I do as gracefully as possible.

* * *

This particular Scot stepped into a telegraph office and picked up one of the blanks. He looked at the clerk behind the counter.

"How much," he asked, "is a telegraph to Chicago?"

"A wire to Chicago," responded the clerk promptly, "will cost you five cents a word for ten words. There will be no charge for the signature."

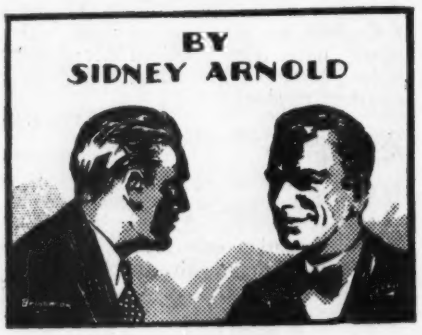
The Scot looked musingly at the clerk.

"There will be no charge for the signature?" he repeated, after a pause.

* * *

I was sorry to learn this week that my friend, J. Kefferley, who conducts a sheet metal business in Chicago's northwest side, is ill in the Lutheran Deaconess Hospital of this city.

I join with all of his many friends in wishing him a quick return to good health.



Dave Farquhar, Chicago branch T. & B., going to Flint, Michigan, the other night, rushed down the aisle of a Pullman shouting: "Whiskey! Whiskey, quick! A woman has fainted."

A dozen flasks were tendered him. Seizing one, he took a deep draught and sighed with relief:

"Thanks, so much! Seeing a woman faint always makes me sick!"

* * *

F. E. Mehrings, Manager of the Meyer Furnace Company, Peoria, and Max Baugh, Chicago representative of the same company, were in Chicago on Friday of this week and dropped into our office for a short period. Mr. Mehrings had been at the Flint convention of the Michigan Sheet Metal and Roofing Contractors' Association and was on his way back to Peoria.

* * *

"That's right," said the clerk.

The Scot rubbed his forehead with the pencil.

"Well," he finally stated, "suppose you just send my signature."

The clerk grinned.

"All right," he cried, "I'll do that for you. What's your name?"

Another pause on the part of the Scot.

"Well," he finally murmured, "I may not look it, but I'm an Indian, and my name is I-Wont-Be-Home-Till-Friday!"

* * *

"Are you a clock watcher?" asked the employer of the candidate for a job.

"No. I don't like inside work," replied the applicant, without heat, "I'm a whistle listener."

* * *

"Dear!"

With a glance she tried to cow him. But he only looked sheepish.

"Puppy!" she exclaimed.

He choked—there was a frog in his throat. Then realizing that he had made an ass of himself by acting like a bear, he ducked.

* * *

Will a Furnace Heat?

Salesman: "Ladies and gentlemen! I have here the famous flexible comb that will stand any kind of treatment. You can bend it double—you can hit it with a hammer—you can twist it—you can—"

Interested Listener: "Say, mister, can you comb your hair with it?"

* * *

"I say," inquired the Englishman of a street car motorman, "do the trams in this country operate with block systems?"

"Sure," the motorman answered, "the greatest in the world. Don't you see I'm blocked by the automobiles and trucks for blocks ahead?"

* * *

Two boys were very much interested in watching an extremely fat woman who was weighing herself.

She dropped in a penny, but the machine was out of order and only registered 75 pounds.

"Good night, Bill," gasped one of the youngsters in amazement, "she's hollow!"

Iron, Steel Output Records Falling

February Iron Rate a Monthly High—Work Extra Turns in Mills —Car Buying Brisk—Structural Lettings Rise—Ford Seeks Ore

BLAST furnaces in February made 114,833 gross tons of pig iron daily, a rate never equaled in any February, and exceeded in all history only by the 115,207 tons of March, 1925.

At the month's end 208 stacks were active, a net gain of six in February and ten since December 31. Four of the stacks lighted last month were at steel works, supporting the belief that February statistics on steel ingot production will disclose another record.

March appears at least to be carrying on this exceptional activity in some steel lines and to be bettering it in others.

Specifications have been outrunning shipments, with the result backlogs, especially in sheets, strip and bars, are heavier than a month ago.

Save only that deferred deliveries compel buyers to specify farther ahead, requirements are not being anticipated. Market observers are convinced that substantially the current level of production is insured into May, when a turndown would be seasonal.

Contracting for finished steel for the second quarter continues in abeyance, for one reason because requirements now on mill books will carry many buyers well into that period, but the price situation is firm. Premiums are being offered in the East for prompt wire rods.

Copper and lead seldom have been in such strong positions as during the past week. Copper prices advanced from 18.00c, Connecticut, to 19.50c, a jump without parallel, except for war years.

The strength in lead was not so well reflected in prices because of the unsympathetic market in London.

Tremendous demand for both metals has come from automobile and electric power industries.

Copper

Domestic sales in the past week were not large, but coming on top of order books already crowded, pressure became extraordinary. Demand appeared larger than producers were able to handle. Some buying at first was for early positions, with the bulk for June shipment.

As producers became nearly sold out for the first half of the year, they grew more reluctant to sell, but users appeared eager to buy despite higher prices.

At times the market was in turmoil, and the price uncertain, but later the situation calmed down as users became better covered on their needs and producers were better able to reassure their customers.

Tin

The price has held remarkably steady in the face of an increase in the world visible supply to the largest in more than seven years.

American deliveries last month were 6,750 tons, not quite so large as expected. The total for January and February was 15,545 tons, the largest for the first two months of any year.

Zinc

Prime western continues to sell in a routine way at the unchanged price of 6.35c, East St. Louis. Shipments are large but supplies are plentiful. High grade is unchanged and going in big tonnages.

Lead

Producers are unusually well booked for March and April. The East St. Louis price has advanced almost to the American Smelting & Refining Company's price of 7.10c, and the New York open market has moved slightly higher.

Pig Iron

February pig iron shipments at Pittsburgh were large for practically all producers, and in most instances higher than those of January, despite the fewer number of days.

Shipments were ahead of production for some companies. The Standard Sanitary Manufacturing Company is inquiring for an unstated tonnage of No. 2 and No. 2X iron for second quarter, for delivery to Pittsburgh and New Brighton, Pennsylvania, plants.

Inquiry generally is not brisk, although a steady volume of small-lot business is being placed. Some talk is heard of higher prices in the near future, but no strengthening is noted in recent sales. Sellers are unable to obtain more than $17.50 base, valley, on small orders for No. 2 foundry iron.

The average sales price of bessemer iron in February was $18.25, and of basic $17.50, according to W. P. Snyder & Company.

Furnace order books are nearly filled at Chicago with the usual second quarter contract tonnage. Thus sellers' position is strengthened on the $20 price for the base grades.

Reported weakness in the valley price is having only a sentimental effect here, as competition from that source is met only in Indiana.

Some iron is being offered here on a basis of $19.75, Chicago, for shipment by vessel from eastern steel works' lake furnaces.

No sales are reported. It is understood a pig iron seller in this district will be the local sales agent for lower lake furnaces this season.

March shipments from Chicago furnaces are holding to the February daily rate.

Spot pig iron buying is active at Birmingham and delivery during March is likely to exceed production. A few inquiries have been received for second quarter, but no sales are reported. Foundry iron is $16.50, base, Birmingham, and indications are that this will apply for the next 90 days. Production in March will equal that of January, when a record for more than two years was reported.

Chicago Warehouse Metal and Furnace Supply Prices

AMERICAN ARTISAN is the only publication containing Western Metal, Furnace Supply and Hardware prices corrected weekly

METALS

PIG IRON

Chicago Fdy., No. 2	$20 00
Southern Fdy. No. 2	22 51 to 23 01
Lake Superior Charcoal	27 04
Malleable	20 00

FIRST QUALITY BRIGHT CHARCOAL TIN PLATES

IC	20x28 112 sheets	$22 50
IX	20x28	25 50
IXX	20x28 56 sheets	14 50
IXXX	20x28	15 50
IXXXX	20x28	17 00

TERNE PLATES

		Per Box
IC	20x28, 40-lb. 112 sheets	$26 70
IX	20x28, 40-lb. 112 sheets	29 70
IC	20x28, 25-lb. 112 sheets	22 20
IX	20x28, 25-lb. 112 sheets	25 20
IC	20x28, 20-lb. 112 sheets	20 25
IV	20x28, 20-lb. 112 sheets	23 00

"ARMCO" INGOT IRON PLATES

No. 8 ga.—100 lbs.	$4 15
3/16 in.—100 lbs.	4 05
¼ in.—100 lbs.	3 85

COKE PLATES

Cokes, 80 lbs., base, 20x28	$12 00
Cokes, 90 lbs., base, 20x28	12 20
Cokes, 100 lbs., base, 20x28	12 40
Cokes, 107 lbs., base, IC 20x28	12 75
Cokes, 135 lbs., base, IX 20x28	14 75
Cokes, 155 lbs., base, 2X, 56 sheets	8 50
Cokes, 175 lbs., base 3X, 56 sheets	9 35
Cokes, 195 lbs., base 4X, 56 sheets	10 25

BLUE ANNEALED SHEETS

Base 10 ga. per 100 lbs.	$3 35
"Armco" 10 ga. per 100 lbs.	4 15

ONE PASS COLD ROLLED BLACK

No. 18-20 per 100 lbs.	$3 60
No. 22 per 100 lbs.	3 75
No. 24 per 100 lbs.	3 80
No. 26 per 100 lbs.	3 90
No. 27 per 100 lbs.	3 95
No. 28 per 100 lbs.	4 05
No. 29 per 100 lbs.	4 20
No. 30 per 100 lbs.	4 30

"ARMCO" GALVANIZED

"Armco" 24 per 100 lbs.	$6 15

GALVANIZED

No. 16 per 100 lbs.	$4 15
No. 18 per 100 lbs.	4 30
No. 20 per 100 lbs.	4 45
No. 22 per 100 lbs.	4 50
No. 24 per 100 lbs.	4 65
No. 26 per 100 lbs.	4 90
No. 27 per 100 lbs.	5 00
No. 28 per 100 lbs.	5 15
No. 30 per 100 lbs.	5 55

BAR SOLDER

Warranted 50x50 per 100 lbs.	$31 00
Commercial 45-55 per 100 lbs.	28 50
Plumbers per 100 lbs.	26 00

ZINC

In Slabs	$ 7 25

SHEET ZINC

Cask Lots (600 lbs.)	$11 25
Sheet Lots	12 25

BRASS

Sheets, Chicago Base	24¾c
Mill base	23¾c
Tubing, brazed base	28¾c
Wire, base	24¼c
Rods, base	21½c

COPPER

Sheets, Chicago base	29½c
Mill Base	28½c
Tubing, seamless base	30¾c
Wire, plain rd., 8 B. & S. Ga. and heavier	26⅞c

LEAD

American Pig	$7 50
Bar	8 50

TIN

Pig Tin per 100 lbs.	$54 00
Bar Tin per 100 lbs.	55 00

HARDWARE, SHEET METAL SUPPLIES, WARM AIR FURNACE FITTINGS AND ACCESSORIES.

ASBESTOS

Paper up to 1/16	6c per lb.
Roll board	6¾c per lb.
Mill board 3/32 to ⅛	6c per lb.
Corrugated Paper (250 sq. ft. to roll)	$6 00 per roll

BRUSHES

Furnace Pipe Cleaning Bristle with handle each	$0 75
Flue Cleaning Steel only, each	1 25

CEMENT, FURNACE

American Seal, 5-lb. cans, net	$ 45
American Seal, 10-lb. cans, net	85
American Seal, 25-lb. cans, net	2 25
Pecora per 100 lbs.	7 50

CHIMNEY TOPS

Adams' Revolving

	Wt. Doz.	Price Doz.
4 in.	21 lbs.	$11 00
6 in.	24 lbs.	11 50
7 in.	30 lbs.	13 50
8 in.	33 lbs.	15 00
9 in.	51 lbs.	16 50
10 in.	56 lbs.	18 00
12 in.	66 lbs.	22 00
14 in.	110 lbs.	36 00

CLINKER TONGS

Each	$1 50

CLIPS

Damper No-Rivet Steel, with tail pieces, per gross	$9 50
Rivet Steel, with tail pieces, per gross	7 50
Tail pieces, per gross	2 40

COPPERS—Soldering Pointed Roofing

3 lb. and heavier per lb.	40c
2½ lb. per lb.	45c
2 lb. per lb.	48c
1½ lb. per lb.	55c
1 lb. per lb.	60c

CORNICE BRAKES

Chicago Steel Bending Nos. 1 to 6B	Net

CUT-OFFS

Gal., plain, round or cor. rd.

26 gauge	30%
28 gauge	35%

DAMPERS

"Yankee" Hot Air 7 inch, each 20c, doz.	$1 60
8 inch, each 25c, doz.	2 20
9 inch, each 30c, doz.	2 60
10 inch, each 32c, doz.	2 80
Smoke Pipe 7 inch, doz.	$1 60
8 inch, doz.	2 20
9 inch, doz.	3 00
10 inch, doz.	3 75
12 inch, doz.	4 50

ADAMS No. 1 CHECK

Check and Collar Complete 8 inch, each	2 00
9 inch, each	2 25
End Check Only 8 inch, each	1 60
9 inch, each	1 85
Collar Only 8 inch, each	50
9 inch, each	65

No. 2 CHECK

8 inch, each	1 00
9 inch, each	1 00
10% Disc. on Adams No. 1 and No. 2 Check	
Diamond Smoke Pipe 7 inch, doz.	$2 00
8 inch, doz.	2 20
9 inch, doz.	4 80
10 inch, doz.	6 00

Adams' Sheet Metal

7 inch, doz.	$1 60
8 inch, doz.	2 20
9 inch, doz.	2 60
10 inch, doz.	2 80
12 inch, doz.	3 50
14 inch, doz.	5 00

EAVES TROUGH

Galv. Crimpedge, crated 75 &	10%
Zinc, "Barnes"	60%

ELBOWS

Conductor Pipe

Galv. plain or corrugated, round flat Crimp,

28 Gauge	60%
26 Gauge	45%
24 Gauge	15%

Galv. Terne Steel

Plain Rd. and Rd. Corr.:

28 Ga.	60%
26 Ga.	45%
24 Ga.	15%

Square Corrugated

No. 28 Gauge	50%
26 Gauge	35%

Portico Elbows

Standard Gauge Conductor Pipe, plain or corrugated.

Not nested	70 & 5%
Nested Solid	70 & 5%

Sq. Corr., A. & B. & Octagon

28 Ga.	50%
26 Ga.	35%

Portico

1", 1¼", 1½"	45%

Copper

16 oz., all designs	50%

Zinc—

All styles	60%

ELBOWS—Stove Pipe

1-piece Corrugated. Uniform Blue "Milcor" No. 28 Gauge.	Doz.
5-inch	$1 15
6-inch	1 25
7-inch	1 75

Special Corrugated

6-inch	$1 00
7-inch	1 60

Adjustable—Uniform Blue

"Milcor" No. 28 Gauge. Uniform Blue.

5-inch	$1 60
6-inch	1 75
7-inch	2 10

WOOD FACES—60% off list.

FENCE

726-6-12½% (100 rods)	$28 63
1948-6-14½% (100 rods)	43 62

FILES AND RASPS

Heller's (American)	50-10%
American	60-10%
Arcade	50%
Black Diamond	50%
Eagle	50%
Great Western	50%
Kearney & Foot	50%
McClellan	50%
Nicholson	50%
Simonds	60%

FIRE POTS

Geo. W. Diener Mfg. Co.	Ea.
No. 02 Gasoline Torch, 1 qt.	$ 5 13
No. 9250, Kerosene, or Gasoline Torch, 1 qt.	6 50
No. 10 Tinner's Furn. Square tank, 1 gal.	11 20
No. 15 Tinner's Furn. Round tank, 1 gal.	10 70
No. 21 Gas Soldering Furnace	8 60
No. 110 Automatic Gas Soldering Furnace	10 50

Quick Meal Stove Co. Vesuvius, F. O. B. St. Louis 30%
(Extra Disct. for large quantities.)

GALVANIZED WARE

Pails (Galv. after made), 10-qt.	$2 00
Tubs (Galv. after made). No. 1	5 75
No. 2	6 50

GLASS

Single Strength, A, all brackets	87%
Single Strength, B, all brackets	88-5%
Double Strength, A, all brackets	87%
Double Strength, B, all brackets	88-5%

HANGERS

Conductor Pipe

Milcor Perfection Wire	25%
Milcor Triplex Wire	10%

Eaves Trough

Milcor Steel (galv. after forming) List	plus 12½%
Milcor Selflock S. T. Wire, List	plus 50%

HOOKS

Conductor

"Direct Drive" Wrought Iron for wood or brick 15%

HUMIDIFIER

"Front-Rank," Automatic

In single lots	50%
In lots of 10 or more	50-5%
In lots of 25 or more	50-10%
Vapor pans, etc., each	50%

LIFTERS

Stove Cover

Coppered per gro.	$6 00
Alaska per gro.	4 75

MALLETS

Tinners

Hickory per doz.	$1 35

MITRES

Galvanized steel mitres

28 Ga.	70
26 Ga.	80-30

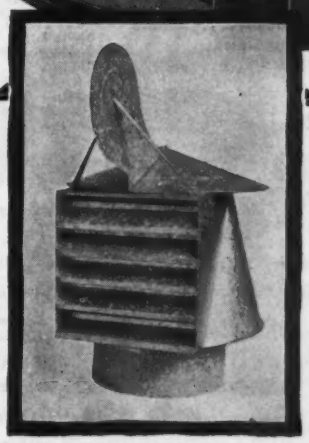
NAILS

Cut Steel, base	$4 00
Wire Common	$3 10
Cement Coated	3 10

(Continued on page 78)

TONCAN

Toncan is ideal for furnace or stove construction because it is ductile and strong—forms easily—welds perfectly. Its heat conductivity is superior to cast iron. Among others using Toncan is the A. H. Robinson furnace illustrated here.



Ventilator manufacturers have found from actual experience that Toncan Iron gives greatest satisfaction to their customers.

Rust-resisting TONCAN IRON for Stoves, Furnaces, Ventilators and Exposed Sheet Metal work of all kinds - - - - -

THE furnace dealer or sheet metal contractor who uses Toncan Copper Mo-lyb-den-um Iron or products marked with the Toncan label builds undeniable prestige for his business.

For Toncan is an alloy of pure iron with copper and molybdenum—a metal that is outstanding in its ability to resist rust and corrosion.

That is why Toncan is so widely used for ventilators, downspouting, gutters, cornices, flashing, roofing and other places subject to weather attacks.

There is a Toncan Book "The Path to Permanence." If you haven't a copy write for one.

CENTRAL ALLOY STEEL CORPORATION
Massillon, Ohio
WORLD'S LARGEST AND MOST HIGHLY SPECIALIZED ALLOY STEEL PRODUCERS

TONCAN COPPER Mo-lyb-den-um IRON

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Asbestos Dry Paste:

200-lb. barrel	$14 00
100-lb. barrel	7 50
50-lb. pail	4 25
10-lb. bag	1 00
5-lb. bag	55
2½-lb. cartons	25

POKERS, FURNACE

Each $0 75

POKERS, STOVE

Nickel Plated, coil handles, per doz.	1 10
W'r't Steel, str't or bent, per doz.	$0. 75

PIPE

Conductor

Cor. Rd., Plain Rd., or Sq.

Galvanized

Crated and nested (all gauges) 75-7½%
Crated and not nested (all gauges) 75-2½%

Furnace Pipe

Double Wall Pipe and Fittings 60%
Single Wall Pipe, Round Galvanized Pipe 60%
Galvanized and Tin Fittings 60%

Lead

Per 100 lbs. $12 50

Stove Pipe

"Milcor" "Titelock" Uniform Blue Stove

28 gauge, 5 inch U. C. nested	11 00
28 gauge, 6 inch U. C. nested	12 00
28 gauge, 7 inch U. C. nested	14 00
30 gauge, 5 inch U. C. nested	10 25
30 gauge, 6 inch U. C. nested	11 00
30 gauge, 7 inch U. C. nested	13 00

T-Joint Made up

6-inch, 28 ga. ...per doz. $ 3 40

All Zinc

No. 11, all styles 60%

PULLEYS

Furnace Tackle....per doz.	$0 85
.....per gro.	8 50
Furnace Screw (enameled) .....per doz.	75

PUTTY

Commercial Putty, 100-lb. Kits $3 50

QUADRANTS

Malleable Iron Damper.....10%

REDUCERS—Oval Stove Pipe

	Per Doz.
7—6, 28-gauge, 1 doz. in carton	$2 00

REGISTERS AND BORDERS

Baseboard, Floor and Wall

Cast Iron 20%
Steel and Semi-Steel 33⅓%
Baseboard, 1 piece 33⅓-20%
Baseboard, 2 piece 33⅓%
Wall 33⅓%
Adjustable Ceiling Ventilators 33⅓%

Register Faces—Cast and Steel

Japanned, Bronzed and Plated, 4x6 to 14x14.....33⅓%
Large Register Faces—Cast, 14x14 to 38x42 .....50%
Large Register Faces—Steel, 14x14 to 38x42 .....60%

Ventilating Register

Per gross	9 00
Small, per pair	30
Large, per pair	50

RIDGE ROLL

Galv., Plain Ridge Roll, b'dld 75-15-5%
Galv., Plain Ridge Roll crated 75-15%

SCREWS

Sheet Metal

7, ½x⅛, per gross $0 52
No. 10, ¾x3/16, per gross 68
No. 14, ⅞x¼, per gross.. 83

SHEARS, TINNERS' & MACHINISTS'

Viking $22 00

Lennox Throatless

No. 18 .....35%
Shear blades 10%
(f. o. b. Marshalltown, Iowa)

SHIELDS, ADJUSTABLE RADIATOR

No. 1 "Gem" 11" to 17"....30%
No. 2 "Gem" 14" to 24"....30%
No. 8 "Gem" 35" to 65"....30%

SHOES

Galv. 28 Gauge, Plain or corrugated round flat crimp..60%
26 gauge round flat crimp..45%
24 gauge round flat crimp..15%

SNIPS, TINNERS

Clover Leaf .....40 & 10%
National .....40 & 10%
Star 50%
Milcor .....Net

SQUARES

Steel and Iron .....Net
(Add for bluing $3 per doz. net)
Mitre .....Net
Try .....Net
Try and Bevel .....Net
Try and Mitre .....Net
Fox's .....per doz. $6 00
Winterbottom's 10%

STOPPERS, FLUE

Common .....per doz.	$1 10
Gem, No. 1 .....per doz.	1 10
Gem, flat, No. 3....per doz.	1 00

VENTILATORS

Standard .....30 to 40%

WIRE

Black annealed wire, No. 9, per 100 lbs.	$3 30
Galvanized barb wire, per 100 lbs.	3 90
Cattle Wire—galvanized catch weight spool, per 100 lbs.	3 80
Galvanized Plain Wire, No. 9, per 100 lbs.	3 25

You Can

Lower Shop Costs
Increase Profits
And Produce a
More Lasting Quality
of Sheet Metal
Work

with

Black, Galvanized and Terne

SHEETS

of

COP-R-LOY

Reg. U. S. Pat. Off.

THE COPPER ALLOYED SHEET STEEL

Time saved in forming, bending and braking means a better profit for you in the finished job. Wheeling Sheets of COP-R-LOY combine "soft" workability with great durability. They are *flat*—bundle after bundle. They take a single and double seam without cracking—all operations are performed with the highest degree of efficiency and at the lowest cost.

Add to these definite time, money and labor saving advantages the fact that these sheets are of COP-R-LOY, the Copper Alloyed Sheet Steel of national reputation, and you will readily appreciate why sheet metal workers, everywhere, insist upon Wheeling Quality. Prompt shipments to your shop from a warehouse near you.

WHEELING CORRUGATING COMPANY, Wheeling, W. Va.
Branches: New York Buffalo Philadelphia Chicago
Kansas City St. Louis Richmond Chattanooga
Minneapolis Des Moines Columbus, Ohio

Wheeling Spanish Metal Tile

Here is roofing that has the looks of Old Spanish Tile without the weight or cost penalty. Fire-proof, lightning-proof, leak-proof. Low in price — good profit assured. Suitable for all types of homes and buildings. Made of COP-R-LOY and Hand-Dipped in Pure Molten Zinc, *after forming.*

W Wheeling
CORRUGATING COMPANY

Reg. U. S. Pat. Off.

Wheeling Roofing Ternes

Made of COP-R-LOY, The Copper Alloyed Sheet Steel, and coated to full weight with pure tin and lead. The practical roofing for many buildings. Fire-proof, lightning-proof. Low cost—lower insurance rates.

BUYERS' DIRECTORY

Asbestos Liquid.
B. & F. Mfg. Co., Des Moines, Ia.

Acetylene (Gas) Dissolved.
Prest-O-Lite Co., Inc., New York, N. Y.

Benches—Steel
Maplewood Machinery Co., Chicago, Ill.

Bolts—Stove.
The Kirk-Latty Co., Cleveland, Ohio
Lamson & Sessions Co., Cleveland, Ohio
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Brakes—Bending.
Dreis & Krump Mfg. Co., Chicago, Ill.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Brakes—Cornice.
Dreis & Krump Mfg. Co., Chicago, Ill.

Brass and Copper.
American Brass Co., Waterbury, Conn.
Copper & Brass Research Association, New York

Cans—Garbage.
Osborn Co., The J. M. & L. A., Cleveland, Ohio

Castings—Malleable.
Fanner Mfg. Co., Cleveland, Ohio

Ceilings—Metal.
Friedley-Voshardt Co., Chicago, Ill.
Milwaukee Corrugating Co., Mil. Ch'go, La Crosse, Kan. City
Wheeling Corrugating Co., Wheeling, W. Va.

Chaplets.
Fanner Mfg. Co., Cleveland, Ohio

Chimney Tops.
Standard Ventilator Co., Lewisburg, Pa.

Clinker Tongs.
L. J. Mueller Furnace Co., Milwaukee, Wis.
Stover Mfg. & Engine Co., Freeport, Ill.

Copper.
American Brass Co., Waterbury, Conn.
Copper & Brass Research Association, New York

Cornices.
Friedley-Voshardt Co., Chicago, Ill.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Cutting Blowpipes.
Oxweld Acetylene Co., New York, N. Y.

Cut-offs—Rain Water.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Dampers—Quadrants—Accessories.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City
L. J. Mueller Furnace Co., Milwaukee, Wis.
Parker-Kalon Corp., New York, N. Y.
Stover Mfg. & Engine Co., Freeport, Ill.

Damper Regulators.
National Regulator Co., Chicago, Ill.
H. M. Sheer Co., Quincy, Ill.
Thermo-Control Regulator Co., Youngstown, Ohio

Dies—Punch & Press.
La Salle Machine Works, Chicago, Ill.

Diffuser—Air Duct.
Aeolus-Dickinson Co., Chicago, Ill.
L. J. Mueller Furnace Co., Milwaukee, Wis.

Doors—Metal.
Lupton's Sons Co., David, Philadelphia, Pa.

Drive Screws—Hardened Metallic.
Parker-Kalon Corp., 200 Varick St., New York

Eaves Trough.
Barnes Metal Products Co., Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City
New Jersey Zinc Sales Co., The, New York, N. Y.
Wheeling Corrugating Co., Wheeling, W. Va.

Elbows and Shoes—Conductor.
Barnes Metal Products Co., Chicago, Ill.
Dieckmann Co., Ferdinand, Cincinnati, Ohio
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Wood Faces—Warm Air.
Auer Register Co., Cleveland, Ohio
American Wood Register Co., Plymouth, Ind.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Fittings—Conductor.
Barnes Metal Products Co., Chicago, Ill.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Flanges.
Chicago Metal Mfg. Co., Chicago, Ill.

Fittings—Steel Pipe.
Chicago Metal Mfg. Co., Chicago, Ill.

Flue Thimbles.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Furnace Cement—Asbestos.
Connors Paint Mfg. Co., Wm., Troy, N. Y.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Furnace Cement—Liquid.
Technical Products Co., Pittsburgh, Pa.

Furnace Cleaners—Suction.
Brillion Furnace Co., Brillion, Wis.

Furnace Coloring (Enamel).
B & F Mfg. Co., Des Moines, Iowa

Furnace Fans.
A-C Mfg. Co., Pontiac, Ill.
Canton Furnace & Mfg. Co., Canton, Ohio
A. H. Robinson Co., Massillon, Ohio
Warm Air Furnace Fan Co., The, Cleveland, Ohio
Williamson Heater Co., Cincinnati, Ohio

Furnace Fuse.
National Regulator Co., Chicago, Ill.

Furnace Regulators.
National Regulator Co., Chicago, Ill.
H. M. Sheer Co., Quincy, Ill.
Thermo-Control Regulator Co., Youngstown, Ohio

Furnace Rings.
Forest City-Walworth Run Foundries Co., Cleveland, Ohio
Milwaukee Corrugating Co., Milwaukee, Wis.

Furnaces—Gas.
Calkins & Pearce, Columbus, Ohio
Mueller Furnace Co., L. J., Milwaukee, Wis.

Furnaces—Warm Air
Agricola Furnace Co., Gadsden, Ala.
American Furnace Co., St. Louis, Mo.
Beckwith Co., The, Dowagiac, Mich.
Brillion Furnace Co., Brillion, Wis.
Canton Furnace & Mfg. Co., Canton, Ohio
Colburn Heater Co., Chicago, Ill.
Emrich Co., C., Columbus, Ohio
Farris Furnace Co., Springfield, Ill.
Floral City Heater Co., Monroe, Mich.
Forest City-Walworth Run Fdy., Cleveland, Ohio
Fox Furnace Co., Elyria, Ohio
Henry Furnace & Fdy. Co., Cleveland, Ohio
Hess-Snyder Co., Massillon, Ohio
Homer Furnace Co., Coldwater, Mich.
Lennox Furnace Co., Marshalltown, Ia.; Syracuse, N. Y.
Magirl Foundry & Furnace Co., P. H., Bloomington, Ill.
May-Fiebeger Furnace Co., Newark, Ohio
Marshall Furnace Co., Marshall, Mich.
Meyer Furnace Co., The, Peoria, Ill.
Midland Furnace Co., Columbus, Ohio
Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.
Mueller Furnace Co., L. J., Milwaukee, Wis.
Premier Warm Air Heater Co., Dowagiac, Mich.
Richardson & Boynton Co., New York, N. Y.
Robinson Co., A. H., Massillon, Ohio
Rybolt Heater Co., Ashland, Ohio
Schwab & Sons Co., R. J., Milwaukee, Wis.
Success Heater Mfg. Co., Des Moines, Ia.
Thatcher Co., Chicago, Ill.
XXth Century Heating & Ventilating Co. Akron, Ohio
Waterman-Waterbury Co., Minneapolis, Minn.
Western Steel Products Co., Duluth, Minn.
Wise Furnace Co., Akron, Ohio

Gas (Acetylene) Dissolved.
Prest-O-Lite Co., Inc., New York, N. Y.

Gas (Nitrogen).
Linde Air Products Co., New York, N. Y.

Gas (Oxygen).
Linde Air Products Co., New York, N. Y.

Glass—Wire.
Lupton's Sons Co., David, Philadelphia, Pa.

Grilles.
Auer Register Co., Cleveland, Ohio
Harrington & King Perforating Co., Chicago, Ill.
Hart & Cooley Co., New Britain, Conn.
Independent Reg. Co., Cleveland, Ohio
Tuttle & Bailey Mfg. Co., Chicago, Ill.

Grilles—Stove Front.
Tuttle & Bailey Mfg. Co., Chicago, Ill.

Guards—Machine and Belt.
Harrington & King Perforating Co., Chicago, Ill.

Handles—Boiler.
Berger Bros. Co., Philadelphia, Pa.

Handles—Soldering Iron.
Hyro Mfg. Co., New York, N. Y.

Hangers—Eaves Trough.
Berger Co., L. D., Philadelphia, Pa.
Horan Stay Hanger Co., Louisville, Ky.
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Heat Hustlers
American Foundry & Furnace Co., Bloomington, Ill

Heat Regulation Systems.
National Regulator Co., Chicago, Ill.
Thermo-Control Regulator Co., Youngstown, Ohio

Heaters—Cabinet.
Fox Furnace Co., Elyria, Ohio
Mueller Furnace Co., L. J., Milwaukee, Wis.
Waterman-Waterbury Co., Minneapolis, Minn.

Heaters—School Room.
Floral City Heater Co., Monroe, Mich.
Meyer Furnace Co., The, Peoria, Ill.
L. J. Mueller Furnace Co., Milwaukee, Wis.
Waterman-Waterbury Co., Minneapolis, Minn.

Hooks—Conductor.
Berger Co., L. D., Philadelphia, Pa.

Hotels
Fort Shelby Hotel, Detroit, Mich.

Humidifiers.
Automatic Humidifier Co., Cedar Falls, Iowa
Chandler Pump Co., Cedar Rapids, Iowa
L. J. Mueller Furnace Co., Milwaukee, Wis.
Salada Mfg. Co., Minneapolis, Minn.

Lath—Expanding Metal.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Machines—Crimping
Bertsch & Co., Cambridge City, Ind.

Machinery—Culvert.
Bertsch & Co., Cambridge City, Ind.

Machines—Tinsmith's.
Bertsch & Co., Cambridge City, Ind.
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Interstate Machinery Co., Chicago, Ill.
La Salle Machine Works, Chicago, Ill.
Maplewood Machinery Co., Chicago, Ill
Marshalltown Mfg. Co., Marshalltown, Iowa
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Peck, Stow & Wilcox Co., Southington, Conn.
Ryerson & Son., Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

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Hyro Mfg. Co., New York, N. Y.

Metals—Perforated.
Harrington & King Perforating Co., Chicago, Ill.

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Friedley-Voshardt Co., Chicago, Ill.
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Miters—Eaves Trough.
Barnes Metal Products Co., Chicago, Ill.
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Nails—Hardened Masonry.
Parker-Kalon Corp., New York, N. Y.

Nitrogen (Gas).
Linde Air Products Co., New York, N. Y.

Oil Burners.
McIlvaine Burner Corp., Evanston, Ill.
Northern Oil Burner Co., Minneapolis, Minn.

Ornaments—Sheet Metal.
Friedley-Voshardt Co., Chicago, Ill.
Gerock Bros. Mfg. Co., St. Louis, Mo.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Oxygen (Gas).
Linde Air Products Co., New York, N. Y.

Paint.
Conners Paint Mfg. Co., Wm., Troy, N. Y.

Patterns—Furnace and Stove.
Cleveland Castings Pattern Co., Cleveland, Ohio
Quincy Pattern Co., Quincy, Ill.
Vedder Pattern Works, Troy, N. Y.

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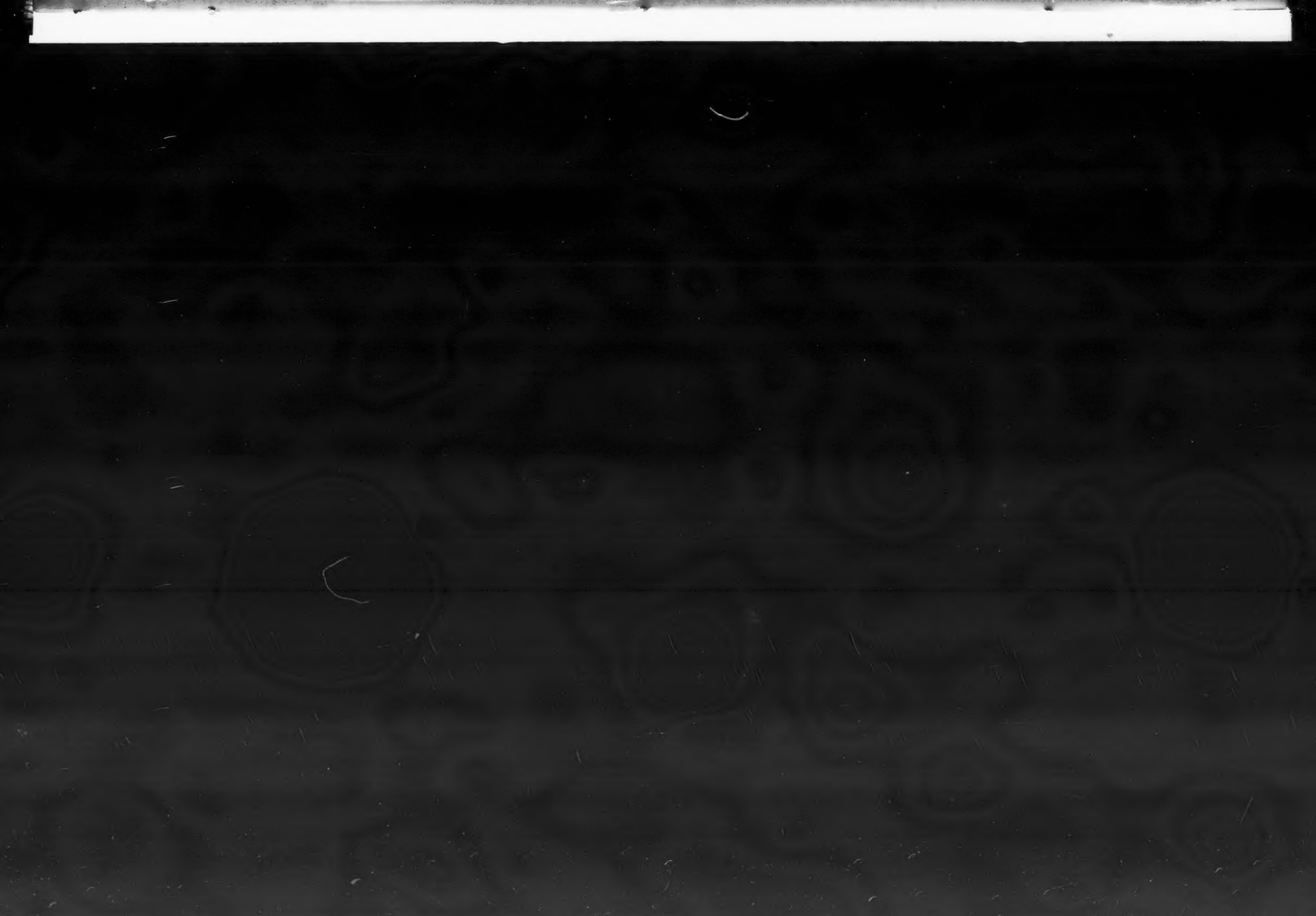
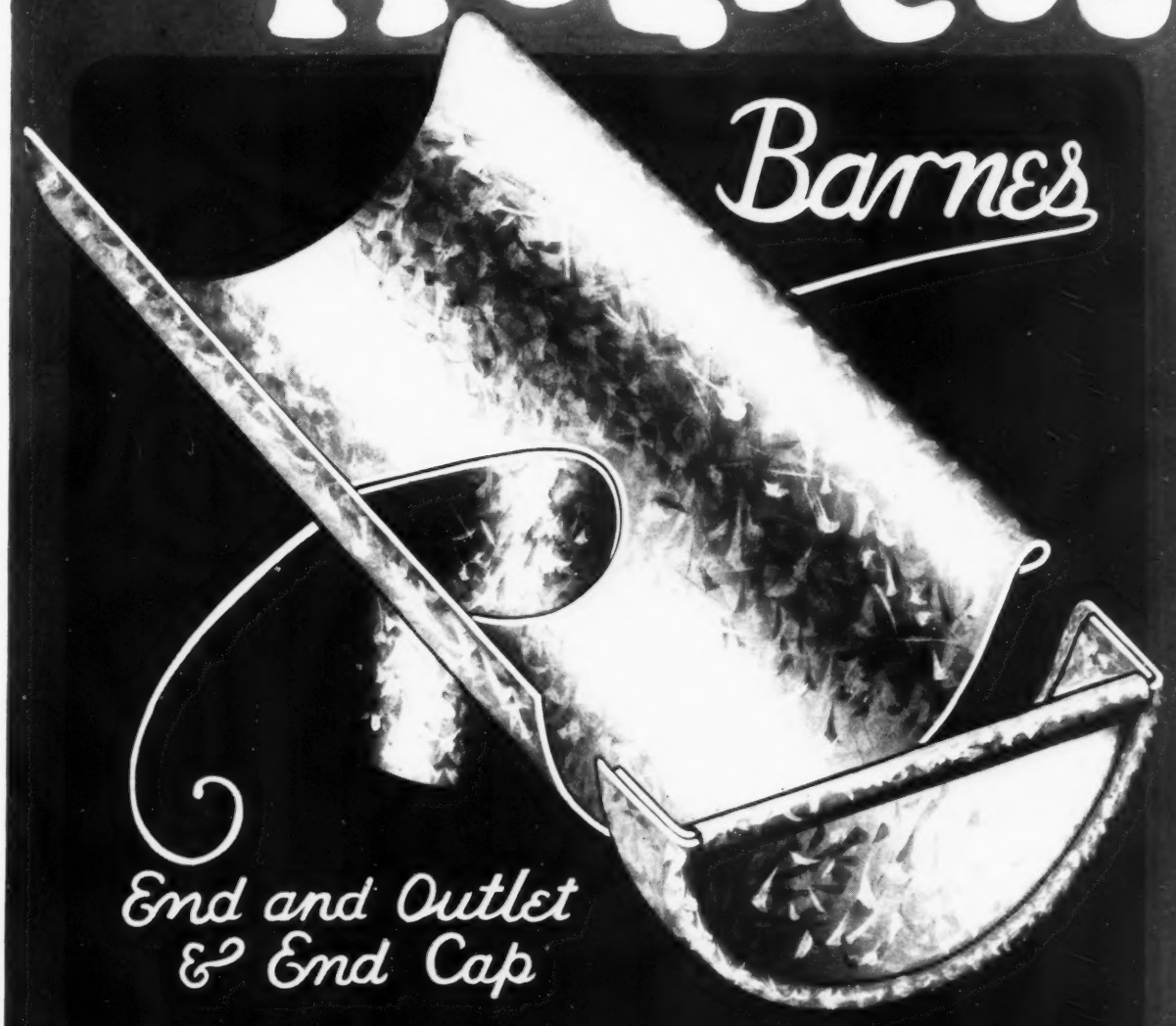


Undenied Progress

Barnes



End and Outlet & End Cap

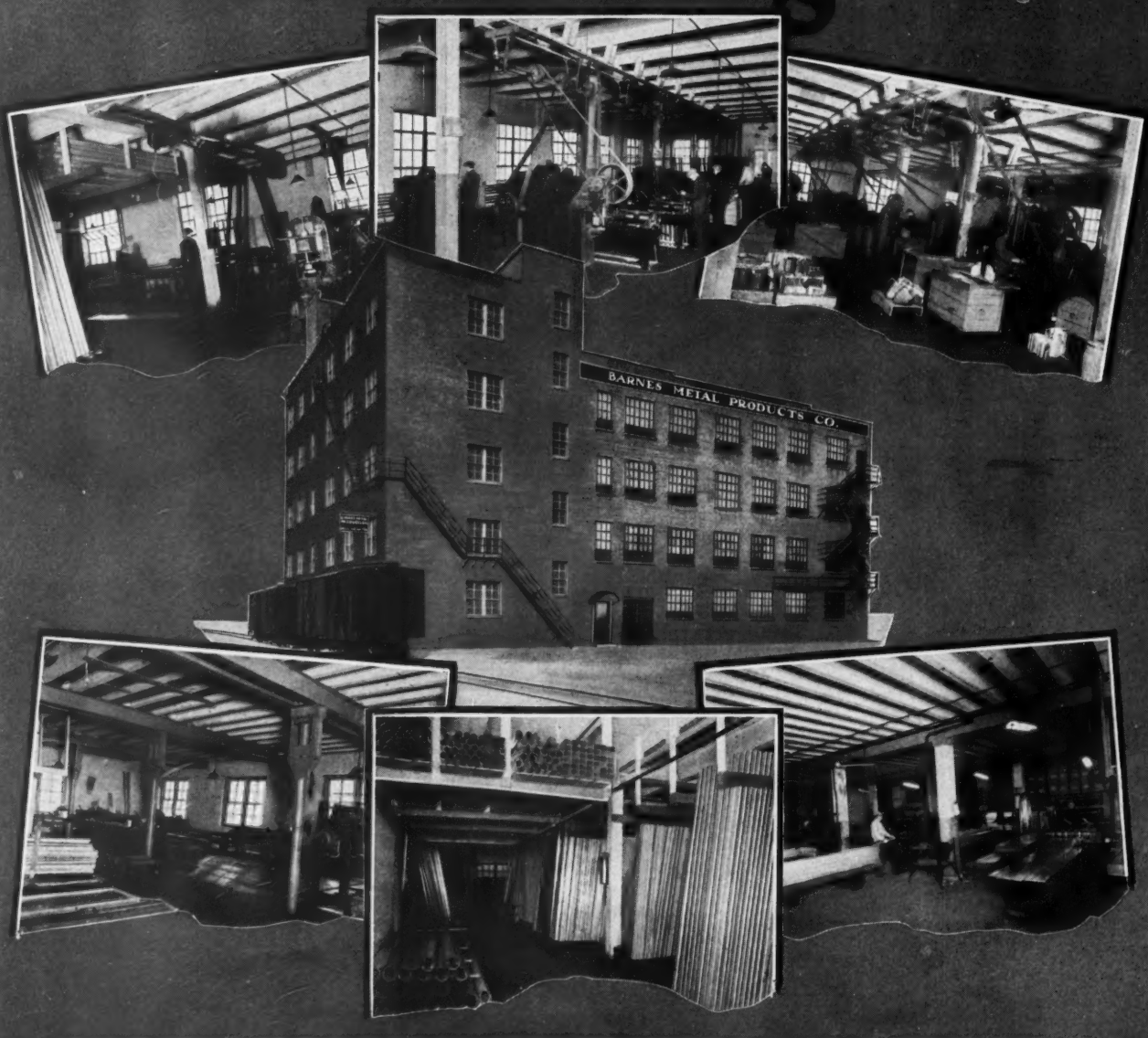
THE "Self-draining" end and outlet with end cap. Drop is seamed into place — no raw edges, no lap seams at the outlet connection. Accurate and correctly tapered to fit the pipe — easily assembled. The end cap has semi-circular bead and stiffening rib, a lock seam that requires no solder, a slip connection that fits quickly and securely on the end piece.

Use Barnes Products to Build Better Business. Our Booklet Tells How. Write for Free Copy

BARNES METAL PRODUCTS COMPANY, 1531 Kingsbury Street, Chicago, Illinois

MANUFACTURERS OF CONDUCTOR PIPE, ELBOWS, EAVES TROUGH AND FITTINGS. ALL SIZES ALL METALS

The Plant Behind Barnes Progress



THIS is the home of Barnes Products, in which is housed the specially constructed equipment that insures a continuous uniformity of Barnes quality.

The unusual merit that characterizes Barnes Products is the result of a dominating spirit of "UNDENIED PROGRESS." Because of this unquestioned leadership, "As Good as Barnes" is a common expression in the trade.

To serve you successfully and better than you were ever served before, is our constant aim and ambition. On this basis of a square deal for all, we invite your business.

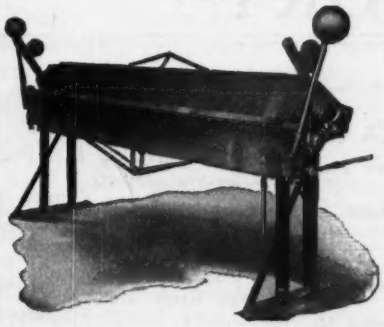
Use Barnes Products to Build Better Business. Our Booklet Tells How. Write for a Free Copy

BARNES METAL PRODUCTS COMPANY, 1531 Kingsbury St., Chicago, Illinois

MANUFACTURERS OF CONDUCTOR PIPE, ELBOWS, EAVES TROUGH AND FITTINGS. ALL SIZES, ALL METALS

CHICAGO STEEL CORNICE BRAKES

STANDARD OF THE WORLD



THE BEST BRAKE FOR ALL PURPOSES: Most Durable, Easiest Operated, Low in Price. Made in All Lengths and to Bend All Gauges of Metal. Over 25,000 in use.

WRITE FOR PARTICULARS

DREIS & KRUMP MFG. CO., 7404 Loomis Street, CHICAGO

PERFORATED METALS

All Sizes and Shapes of Holes
In Steel, Zinc, Brass, Copper, Tinplate, etc.
For All Screening, Ventilating and Draining
EVERYTHING IN PERFORATING METAL

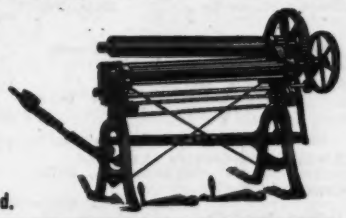
THE HARRINGTON & KING PERFORATING CO.
5649 FILLMORE ST.—CHICAGO, ILL., U. S. A.
NEW YORK OFFICE, 114 LIBERTY ST.

50-INCH FORMING ROLL

This Forming Roll is built in all standard sizes, with our Patented Opening Device by means of which it is opened and closed in a few seconds.

We build a complete line of Shears and punches, all sizes, for hand or belt power.

Write for Catalog "R"
BERTSCH & CO., Cambridge City, Ind.



ROLLED STEEL FLANGES

6 Inches and Larger
¼ Inch and Heavier
Made to Fit—

Lock Seam, Riveted Seam, Spiral and Welded Pipe

Write for Catalogue of Sheet Metal Products

If it is made of Sheet Metal, send us detail or blue print for price.

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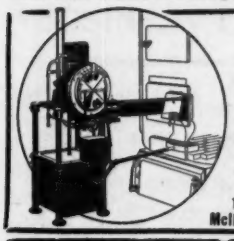

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Listed by Underwriters

Adaptable to warm-air furnaces because the McILVAINE System of continuous flame insures no cracking or burning of fire pots, but produces even, dependable heat.

Not an Intermittent Burner

DEALERS: Write for information today.
McILVAINE BURNER CORP., Dept. A, 747 Custer Ave., Evanston, Ill.

If

it's made of Sheet Metal or it's used in working Sheet Metal and

You

don't know where to get it—

Write to the Notes and Queries Dept. of
AMERICAN ARTISAN

The NEW IMPROVED "STANDARD" ROTABLE VENTILATOR

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"Standard" Ventilator and Chimney Cap—Most Efficient Combination on the market.

THIS favorite ventilator has been further improved to insure—

Now made of ARMCO IRON

Greater Durability
Quieter Operation
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Better Balance

The **New Cone-top Suspension**, new **Bronze Guide Bushings**, and **Cross Braced Skirt** are the new features.

Let us tell you in detail all about this better ventilator.

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STANDARD VENTILATOR CO., LEWISBURG, PA.

EARLE'S VENTILATOR

IMPROVED REVOLVING

It runs in a self-lubricating bearing that is not affected by heat or cold. It is noiseless and produces an upward current of air. No down draft. It will satisfy and give you a good profit.

ASK YOUR NEAREST JOBBER

BERGER BROS. CO.
229 to 237 ARCH STREET
WAREROOMS AND FACTORY: 100 TO 114 BREAD STREET
PHILADELPHIA, PA.
Manufacturers of "Quaker City" line of Miters, Ends, Caps and Outlets 2

BUYERS' DIRECTORY

(Continued from page 80)

Pipe and Fittings—Furnace.
Chicago Furnace Supply Co., Chicago, Ill.
Henry Furnace & Fdy. Co., Cleveland, Ohio
Lamneck Co., W. E., Columbus, Ohio
Meyer & Bro. Co., F., Peoria, Ill.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City
Mueller Furnace Co., L. J., Milwaukee, Wis.
Osborn Co., The J. M. & L. A., Cleveland, Ohio

Pipe and Fittings—Stove.
Meyer & Bro. Co., F., Peoria, Ill.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Pipe—Conductor.
Barnes Metal Products Co., Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Chicago Metal Mfg. Co., Chicago, Ill.
Dieckmann Co., Ferdinand, Cincinnati, Ohio
Friedley-Voshardt Co., Chicago, Ill.
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City
New Jersey Zinc Sales Co., The, New York, N. Y.
Wheeling Corrugating Co., Wheeling, W. Va.

Presses.
La Salle Machine Works, Chicago, Ill.

Punches.
Bertsch & Co., Cambridge City, Ind.
Interstate Machinery Co., Chicago, Ill.
La Salle Machine Works, Chicago, Ill.
Peck, Stow & Wilcox Co., Southington, Conn.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Punches—Combination Bench and Hand.
Hyro Mfg. Co., New York, N. Y.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Punches—Hand.
Hyro Mfg. Co., New York, N. Y.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Putty—Stove.
Conners Paint Mfg. Co., Wm., Troy, N. Y.

Radiator Cabinets.
The Hart & Cooley Mfg. Co., New Britain, Conn.
Tuttle & Bailey Mfg. Co., Chicago, Ill.

Radiators—Shields.
Beh & Co., Inc., New York, N. Y.

Ranges—Combination Gas & Coal.
Thatcher Co., Newark, N. J.

Register Shields.
Beh & Co., Inc., New York, N. Y.
Hall-Neal Furnace Co., Indianapolis, Ind.

Registers—Warm Air.
Auer Register Co., Cleveland, Ohio
Forest City-Walworth Run Foundries Co., Cleveland, Ohio
Hart & Cooley Co., New Britain, Conn.
Henry Furnace & Fdy. Co., Cleveland, Ohio
Independent Register & Mfg. Co., Cleveland, Ohio
Lamneck & Co., W. E., Columbus, Ohio
Meyer & Bro. Co., F., Peoria, Ill.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City
Mueller Furnace Co., L. J., Milwaukee, Wis.
Tuttle & Bailey Mfg. Co., Chicago, Ill.

Registers—Wood.
American Wood Register Co., Plymouth, Ind.
Auer Register Co., Cleveland, Ohio
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City
Mueller Furnace Co., L. J., Milwaukee, Wis.

Regulators—Heat.
National Regulator Co., Chicago, Ill.
H. M. Sheer Co., Chicago, Ill.
Thermo-Control Regulator Co., Youngstown, Ohio

Ridging.
Armco Distributors Ass'n of America, Middletown, Ohio
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Rivets—Stove.
The Kirk-Latty Co., Cleveland, Ohio
Lamson & Sessions Co., Cleveland, Ohio
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Rods—Stove.
The Kirk-Latty Co., Cleveland, Ohio
Lamson & Sessions Co., Cleveland, Ohio

Rolls—Forming.
Bertsch & Co., Cambridge City, Ind.

Roofing Cement.
Connors Paint Mfg. Co., Wm., Troy, N. Y.

Roof—Flashing.
Milwaukee Corrugating Co., Milwaukee, Wis

Roofing—Iron and Steel.
Armco Distributors Ass'n of America, Middletown, Ohio
Central Alloy Steel Corp., Massillon, Ohio
Friedley-Voshardt Co., Chicago, Ill.
Inland Steel Co., Chicago, Ill.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Ryerson & Sons, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
Wheeling Corrugating Co., Wheeling W. Va.

Roofing—Tin.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City
Taylor Co., N. & G., Philadelphia, Pa.
Wheeling Corrugating Co., Wheeling W. Va.

Roofing Tools.
Wm. Eiermann, Brooklyn, N. Y.

Roofing—Zinc.
New Jersey Zinc Sales Co., The, New York, N. Y.

Rubbish Burners.
Hart & Cooley Co., New Britain, Conn.

Schools—Sheet Metal Pattern

Drafting.
St. Louis Technical Institute, St. Louis, Mo.

Schools—Warm Air Heating.
St. Louis Technical Institute, St. Louis, Mo.

Screws—Hardened Metallic Drive.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City
Parker-Kalon Corp., 200 Varick St., New York

Screws—Hardened Self-Tapping, Sheet Metal.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City
Parker-Kalon Corp., 200 Varick St., New York

Screens—Perforated Metal.
Harrington & King Perforating Co., Chicago, Ill.

Shears—Hand and Power.
Interstate Machinery Co., Chicago, Ill.
Marshalltown Mfg. Co., Marshalltown, Iowa
Peck, Stow & Wilcox Co., Southington, Conn.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
Viking Shear Co., Erie, Pa.

Sheet Metal Screws—Hardened, Self-Tapping.
Parker-Kalon Corp., 200 Varick St., New York

Sheets—Black and Galvanized.
Armco Distributors Ass'n of America, Middletown, Ohio
Central Alloy Steel Corp., Massillon, Ohio
Inland Steel Co., Chicago, Ill.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Ryerson & Son., Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
Taylor Co., N. & G., Philadelphia, Pa.
Wheeling Corrugating Co., Wheeling, W. Va.

Sheets—Iron.
Armco Distributors Ass'n of America, Middletown, Ohio
Central Alloy Steel Corp., Massillon, Ohio
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Sheets—Tin.
Taylor Co., N. & G., Philadelphia, Pa.

Sheets—Zinc.
New Jersey Zinc Sales Co., The, New York, N. Y.

Shingles and Tiles—Metal.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City
Wheeling Corrugating Co., Wheeling W. Va.

Sifters—Ash.
Diener Mfg. Co., G. W., Chicago, Ill.

Sky Lights.
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Snips.
Peck, Stow & Wilcox Co., Southington, Conn.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Solder.
Chicago Solder Co., Chicago, Ill.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Soldering Furnaces.
Burgess Soldering Furnace Co., Columbus, Ohio
Diener Mfg. Co., G. W., Chicago, Ill.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Soldering Supplies
Chicago Solder Co., Chicago, Ill.

Specialties—Hardware.
Diener Mfg. Co., G. W., Chicago, Ill.

Stars—Hard Iron Cleaning.
Fanner Mfg. Co., Cleveland, Ohio

Statuary.
Friedley-Voshardt Co., Chicago, Ill.
Gerock Bros. Mfg. Co., St. Louis, Mo.

Steel Pipe—Welded.
Chicago Metal Mfg. Co., Chicago, Ill

Stove Pipe Reducers.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Thatcher Co., Newark, N. J.

Tinplate.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Taylor Co., N. & G., Philadelphia, Pa.

Tools—Roofers.
Wm. Eiermann, Brooklyn, N. Y.

Tools—Tinsmith's.
Bertsch & Co., Cambridge City, Ind.
Dries & Krump Mfg. Co., Chicago, Ill.
Hyro Mfg. Co., New York, N. Y.
Interstate Machinery Co., Chicago, Ill.
Maplewood Machinery Co., Chicago, Ill.
Osborn Co., The J. M. & L. A., Cleveland. Ohio
Peck, Stow & Wilcox Co., Southington, Conn.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
Viking Shear Co., Erie, Pa.

Torches.
Burgess Soldering Furnace Co., Columbus, Ohio
Diener Mfg. Co., G. W., Chicago, Ill.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Trade Extension.
Copper & Brass Research Association, New York, N. Y.
Sheet Steel Trade Extension Committee, Pittsburgh, Pa.

Trimmings—Stove.
Fanner Mfg. Co., Cleveland, Ohio

Ventilators.
Aeolus Dickinson Co., Chicago, Ill.
Akrat Ventilators, Inc., Chicago, Ill.
Arex Company, Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Friedley-Voshardt Co., Chicago, Ill.
Kernchen Co., Chicago, Ill.
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City
Standard Ventilator Co., Lewisburg, Pa.

Ventilators—Ceiling.
Hart & Cooley Co., New Britain, Conn.
Henry Furnace & Fdy. Co., Cleveland, Ohio

Windows—Steel.
Lupton's Sons Co., David, Philadelphia, Pa.

Zinc.
New Jersey Zinc Co., The, New York, N. Y.

WANTS AND SALES

Yearly subscribers to the AMERICAN ARTISAN may insert advertisements of not more than fifty words in our Want and Sales Columns WITHOUT CHARGE.

Such advertisements, however, must be limited to help or situation wanted, tools or equipment for sale, to exchange or to buy, business for sale or location desired and must reach our office by Thursday of the week of publication. This privilege is not extended to manufacturers or jobbers—or those making a business of buying and selling used machines—employment agencies and brokers.

When sending advertisement state whether your name or blind number is to be used.

BUSINESS CHANCES

Lightning Rods—Dealers who are selling Lightning Protection will make money by writing to us for our latest Factory to Dealer Prices. We employ no salesmen and save you all overhead charges. Our Pure Copper Cable and Fixtures are endorsed by the National Board of Fire Underwriters and hundreds of dealers. Write today for samples and prices. L. K. Diddle Company, Marshfield, Wis.

For sale at a sacrifice, 50 galvanized cans that a customer refused to accept on account of size and not workmanship. The description: No. 24 Ingot Iron Galv. 23 in. high and 7 in. dia. Hold practically 4 gallons. These cans are water tight, tested for leaks and have a cast lug threaded, rivited and soldered on 6 in. from bottom that will take a ½ in. faucet by merely screwing in same. This can is reinforced on top edge with ¼ in. double fold. There are no lids. Will take 50 cents each crated F. O. B. car here. Address Oliver Mullen, Bedford, Indiana. M-493

FOR SALE—Good, live, well stocked and equipped sheet metal business. Complete office equipment, extra good truck. All fresh, live moving stock of wide range, including five furnaces on floor just now. Will lump off tools, truck and office furniture and invoice stock. Ill health prevents me from taking care of it properly. Address S-492, AMERICAN ARTISAN, 620 S. Michigan Ave., Chicago, Ill.

For Sale—Good paying established furnace parts business, wholesale and retail in a town of a metropolitan center of two million people, no competition, with an established furnace repair and vacuum cleaning business. A good opportunity for two men who know the furnace business. Address J-493, AMERICAN ARTISAN. 620 So. Michigan Ave., Chicago, Ill.

For Sale or Merge—Well equipped sheet metal shop centrally located in a principal city of the corn belt, in operation many years contracting custom work and manufacturing. Address O-494, AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

FOR SALE—In the best town in southwestern Minnesota, tin, plumbing and heating shop, tools and stock. Doing nice business but must quit on account of my health. Address R-492, AMERICAN ARTISAN, 620 S. Michigan Ave., Chicago, Ill.

Want to negotiate for a hardware business in western town five or ten thousand population. Address H. J. Fueller, Glenside, Pa. W-492

BUSINESS CHANCES

For Sale—Retinning equipment suitable for retinning milk cans and dairy utensils. A complete modern retinning equipment. This equipment is complete in every detail. Have just completed a three-year contract for Swift & Company which averaged over ten thousand cans per year. Reason for selling, am manufacturing a patented article and do not have floor space to do retinning. Address R-494, AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

For Sale—Well equipped tin shop doing good business, small town Northeast Indiana nearest shop 12 miles. Considerable work carried over from last fall. A chance for a man with small capital to get a good paying business and work for himself. Reason for selling, other interests. Address P-494, AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

For Sale—Sheet Metal, Plumbing and Heating Business. Established ten years; doing good business; county seat town of 2,500, northern Iowa. Good dairy country. Poor health reason for selling; stock, tools and fixtures invoice about $5,000. Brick building 22x100 feet; well located. Will sell or rent building. Address S-494, AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

A chance for a young mechanic who wants to get ahead. I have a shop in one of the best locations, large show room and sheet metal shop for sale. There are good prospects next month when the weather opens up. I will sell at a bargain and help him until he gets started. Address O-493, AMERICAN ARTISAN, 620 So. Michigan Ave., Chicago, Ill.

For Sale—Sheet metal business with new brick and tile building in good live So. Dakota town of 4,000, located in center of town with two-room modern apt.; municipal heat; full set of tools and the only shop in town. $5,000 will take it, $4,500 less tools. Address P-492, AMERICAN ARTISAN, 620 S. Michigan Ave., Chicago, Ill.

Wanted to sell at once, first class plumbing, heating and sheet metal shop. Splendid lay out shop and has done a wonderful business in recent years. A rare opportunity for a live wire man who wants to succeed. Address K-493, AMERICAN ARTISAN, 620 So. Michigan Ave., Chicago, Ill.

For Sale—Furnace and tin shop, best location in the city of Cleveland, also large brick house and large store in front. Wish to retire on account of age and health. Tools all new—year old. Address A. Kovacik, 12218 West Madison Ave., Lakewood, Ohio. L-493

FOR SALE—Three styles of heater patterns, wood and metal, for oval radiant heaters, very reasonable. Address T-492, AMERICAN ARTISAN, 620 S. Michigan Ave., Chicago, Ill.

SITUATION WANTED

Wanted—Steady position with reliable concern by one who knows the furnace and sheet metal business. Can draft patterns and read blue prints. Capable of running shop; 38 years of age, married, sober and reliable. Will accept position as clerk or salesman where this knowledge is essential. Address D-493, AMERICAN ARTISAN, 620 S. Michigan Ave., Chicago, Ill.

First class all around sheet metal worker and lay out man wants position at once. Married, sober, steady and reliable. Experienced in all branches of the trade. Have a long and wide range of experience. Been foreman for years. State wages and hours. Will go anywhere. Address W. J. Mack, 121 Third St., St. Charles, Ill. D-494

Sheet metal worker with 16 years' experience on all classes of general sheet metal, and Standard Code furnace work, good at trouble shooting on heating jobs; can lay out patterns and work, estimate, and handle men. Age 37; married and strictly sober. Prefer Illinois, Union shop. Address E-494, AMERICAN ARTISAN.

SITUATION WANTED

Situation Wanted—By first-class Sheet Metal Worker. Estimate and lay out work from blue prints, make and erect all general sheet metal work, inside or out, cornice, marquise, skylights, blow pipe up to 12 gauge, ventilation and install warm air furnaces (Standard Code), metal ceilings, slate, asbestos shingle, zinc and metal tile roofing. Can take charge of all work required. Address T-494, Sheet Metal Worker, 2738 W. Warren Avenue, Chicago, Illinois.

Situation wanted by all-around man with 28 years' experience in tinning, plumbing, steel ceilings and all kinds of heating, etc. Want position in Wisconsin or northern Illinois. Address C-493, AMERICAN ARTISAN, 620 S. Michigan Ave., Chicago, Ill.

Live wire furnace salesman well acquainted with all furnace dealers in Illinois will be open for new connection March 1st. Would like to hear from any reliable furnace company. Prefer Illinois but will consider other territory. Address B-493, AMERICAN ARTISAN, 620 S. Michigan Ave., Chicago, Ill.

A-1 sheet metal worker and estimator and layout man, middle aged, wants steady job. Experienced in cornice, skylight, heating and ventilating and blowpipe. Please state working conditions. Address A-493, AMERICAN ARTISAN, 620 S. Michigan Ave., Chicago, Ill.

Situation Wanted—By first class tinner and furnace man, also understands retinning and all kinds of copper work. Can lay out patterns and do neat work. Middle age and married; 20 years' practice. Address J-494, care AMERICAN ARTISAN.

Position wanted as tinner and plumber in town with good schools. A-1 on warm air furnace work; sober and steady and have 30 years of experience. Address Z-492, AMERICAN ARTISAN, 620 S. Michigan Ave., Chicago, Ill.

A first class ventilating superintendent estimator and mechanic wants position as foreman with a first class firm doing a lot of work. If you are in need of a good man let's talk it over. I am sure I can satisfy you. Address Z-493, AMERICAN ARTISAN.

All around sheet metal worker or salesman wants steady work, can run shop, should make good man for some one. Willing to work and can lay out same; prefer general shop or blow pipe. Understand heating. Address C-494, AMERICAN ARTISAN.

Experienced salesman of good repute and well qualified, would like to connect with an enterprising heating manufacturer. Applicant now holds sales and executive position in same line. Address F-494, AMERICAN ARTISAN.

Wanted—Steady position as sheet metal and furnace man. Also do combination work; will go south and west; distance will be no object. Address Henry Giberson, 511 Hawley Ave., Syracuse, N. Y. A-494

Wanted—Position as salesman with stove or furnace manufacturer, for state of N. Y. Age 40, with life experience. Reference on request. Address W. J. B., 319 N. Drive, Buffalo, N. Y. Y-493

Wanted—Combination plumber and tinner with ability to estimate and handle men, steady work year round, must be reliable and sober. Address K-494, care AMERICAN ARTISAN.

Plumber and tinner with 30 years at the trade wants a job. A small town preferred. Address B-494, AMERICAN ARTISAN.

HELP WANTED

Wanted—Top notch furnace man who wants to hook up with a top notch furnace company. We vacuum any part of the heating and ventilating system of small residences and the largest of industrial plants. Last year we had 6,000 calls for furnace inspections. This is the opportunity for replacements. If you are a wide awake never tiring hustler looking for real money, send your references as they must show a top notch record. Address W-493, AMERICAN ARTISAN, 620 So. Michigan Ave., Chicago, Ill.

Wanted at Once—All around man to do class of work that comes in a country tin shop. Must be able to do plumbing and drive a car. Want a sober man and one who will be on the job. Wages $30 per week the year around. Address O. L. Doward, Mt. Morris, Ill. G-494

Wanted—Intelligent and willing sheet metal worker. One able to lay out work and capable of handling men. Good future with an engineering company located in Chicago (open shop). Address T-493, AMERICAN ARTISAN, 620 So. Michigan Ave., Chicago, Ill.

Wanted—First class furnace and sheet metal worker that can read blue prints and lay out jobs. State wages. Located in northern Illinois. Address S-493, AMERICAN ARTISAN, 620 So. Michigan Ave., Chicago, Ill.

Wanted—Good reliable plumbing, heating and sheet metal man. For information write Leo E. Beall, 107 Nottana St., Sturgis, Mich. X-493

TINNERS' TOOLS

For Sale—One No. 40 Biever threading machine, one year old and in perfect condition. Address Huettman & Federspiel Hardware Co. Store, Port Washington, Wis. Y-492

For Sale—One used Merrell power pipe machine with or without motor. Cuts ⅛ in. to 6 in. pipe. For further information write Leo E. Beall, 107 N. Nottawa St., Sturgis, Mich. R-493

Wanted to Buy—Used 8 foot steel brake and stove pipe crimper. Address P-493, AMERICAN ARTISAN, 620 So. Michigan Ave., Chicago, Ill.

For Sale—Full set of tinner's tools and auto radiator outfit. Address Charles Miller, 522 N. Niel St., Champaign, Ill. X-492

BOOKS

Manual of Automotive Radiator Construction and Repair, by F. L. Curfman and T. H. Leet—Anyone interested in Radiator Repairing will find the 185 pages of practical instructions and the 120 illustrations showing actual construction and repairing a big help. In a condensed manner some four to five thousand answers to questions are given. It is thoroughly practical as both authors are men of wide experience in this work. Printed in large, easy to read type. Measures 5¾x9 inches. Price $2.50. Order from Book Dept., AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

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When sending copy state whether your name or blind number is to be used—also how many insertions are desired.

PATENTS

HUBERT E. PECK
Patent Attorney
Barrister Bldg., WASHINGTON, D. C.

HUMIDITY

We hear a lot about humidity these days. I wonder if we furnace dealers and installers have awakened to the situation yet. The steam and hot water folks have. Yet we are handling a product with which we can come nearer getting the right amount of humidity in the home than with any other way of heating.

We have in our own work, discovered the best way yet to inject moisture in a warm air plant without injury to furnace, or casing. We would like to pass on this information to the trade. It is not a patented article but one you build into the job yourself. We have gotten out a working drawing of this which will be worth a lot more to you than the price we ask—$1.00. Anyone wanting blue print of this address

CHAS. WILSON,
Monmouth, Ill. L-494

EXPERIENCED SALESMAN

To sell high grade cast furnaces to dealers in Illinois, Iowa, Wisconsin and Indiana. Factory located in Illinois. Give full information and references. No. H-494, Care American Artisan, 620 S. Michigan Ave., Chicago.

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"You see I have to do things big, judging by the size of my family," writes a student on the back of a Kodak picture similar to the above.. He adds: "Nothing small about me. I got through being a cheap mechanic when I took your course, and my business has grown wonderfully since, and I feel I really owe it to the St. Louis Technical Institute."

BIG BUSINESS SAYS: PREPARE FOR TOMORROW'S OPPORTUNITY!

Harken to this Command, O Ye Shop Owners, Salesmen, Mechanics, etc. Fortunes will be made in these next few years by those who KNOW. Devote this Winter to mastering a Technical Education so later you can go after the bigger paying Jobs—the ones with steady work—that make for the longer yearly income. You can make this your personal Victory by qualifying yourself to Read Plans, Laying Out, Estimating and Managing the bigger paying jobs.

Yes, Sir, we train you in your own Home, Personal, Clear, Direct

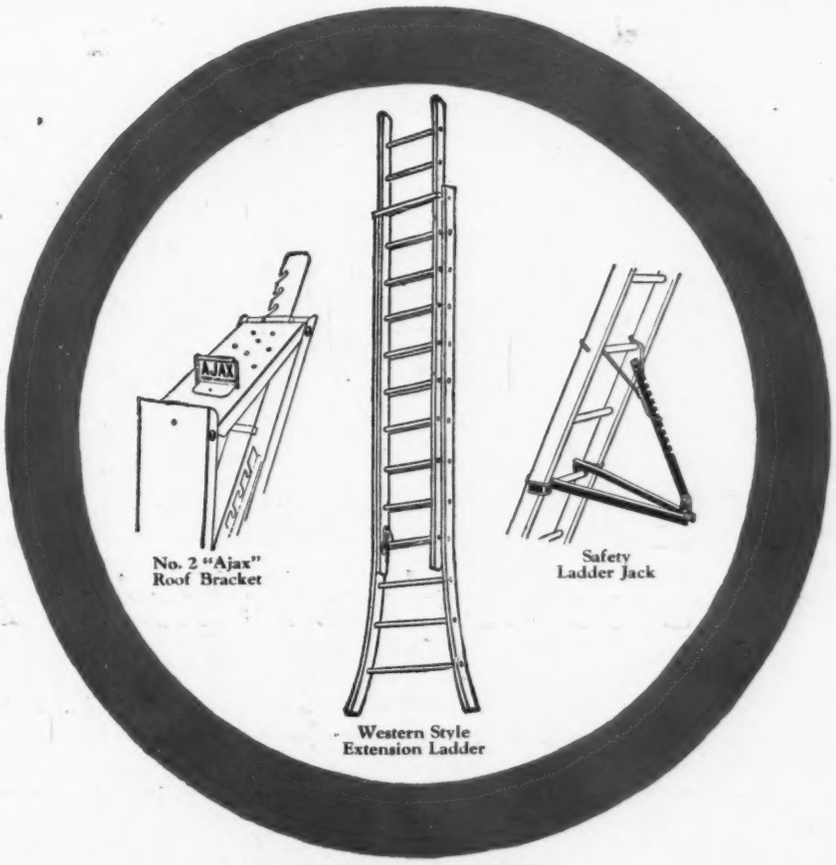
Check your course. Write today before you forget it

- ☐ SHEET METAL DESIGN AND PATTERN DRAFTING
- ☐ SPECIAL WARM AIR FURNACE HEATING
- ☐ SHEET METAL CONTRACTING & ESTIMATING
- ☐ FAN HEATING VENTILATING ENGINEERING

THE ST. LOUIS TECHNICAL INSTITUTE, O. W. KOTHE, Pres. 4543 Clayton Ave., St. Louis, Mo

SOUND LADDERS—SAFE LADDER JACKS AND DEPENDABLE ROOF BRACKETS,

LESSEN THE HAZARD IN ROOF AND SCAFFOLD WORK!



SPRING SUGGESTIONS

OUR Roof Bracket is made of heavy galvanized metal,—adjustable to any pitch,—suitable for plank up to 12 inches in width, and is easily detached for moving. The No. 1 sells for $26.00 per dozen, and the No. 2 for $28.00 per dozen, net.

Our Ladder Jack is practical in every way:—it has a strong four-point suspension from the side rails of the ladder,—can be used on either side of the ladder,—is easy to fold,—convenient to carry. It sells for $42.00 per dozen, net.

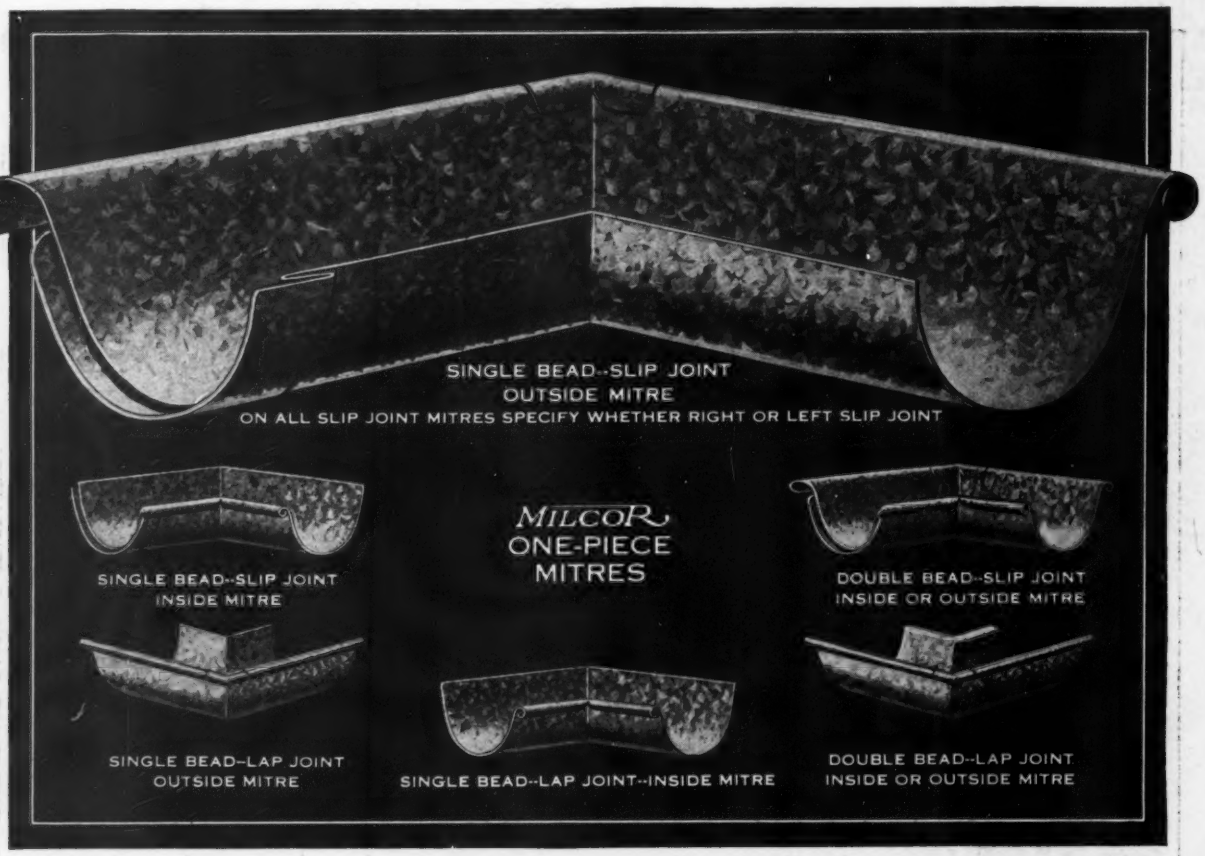
Our "Western Extension" is a good general purpose Ladder having 1⅜ inch clear Spruce side rails—wide spread at bottom—turned White Ash and Hickory rungs—and a strong guard iron across the top of lower section. The 24-26-28-30 and 32 foot lengths sell for 30c per foot; the 34-36 and 40 foot lengths sell for 32c per foot, net.

PRICES NAMED ARE F. O. B. CLEVELAND

THE J. M. & L. A.

OSBORN Co

CLEVELAND — BUFFALO



Look Up Stock Before It Rains Again

There's eave trough and conductor pipe work ahead of you before the spring rains, and you'll probably need additional stock before they start. Have you used Milcor "Crimpedge" Eaves Trough and "Interlock" Pipe?

Automatic machines made in Milcor shops by Milcor men, form both, perfectly, and always of prime sheets not lighter than 28 gauge. Milcor believes that quality materials are always economical in their longer life and in the complete satisfaction they give.

Elbows, Cutoffs, Hooks, Mitres, Ends and Drops, Hangers made in Milcor Plants are formed perfectly for quick assembly and time saving erection. It pays in every way to use them.

All Milcor Rain Carrying Equipment is available for quick shipment from Milwaukee or Branch House stock in Galvanized Sheet Steel Galv. ARMCO Ingot Iron, Galv. Coppered Metal and Anaconda Copper.

Before it rains again investigate Milcor Rain Carrying Equipment. Your trade will want you to use it.

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Milwaukee, Wisconsin

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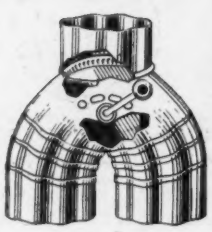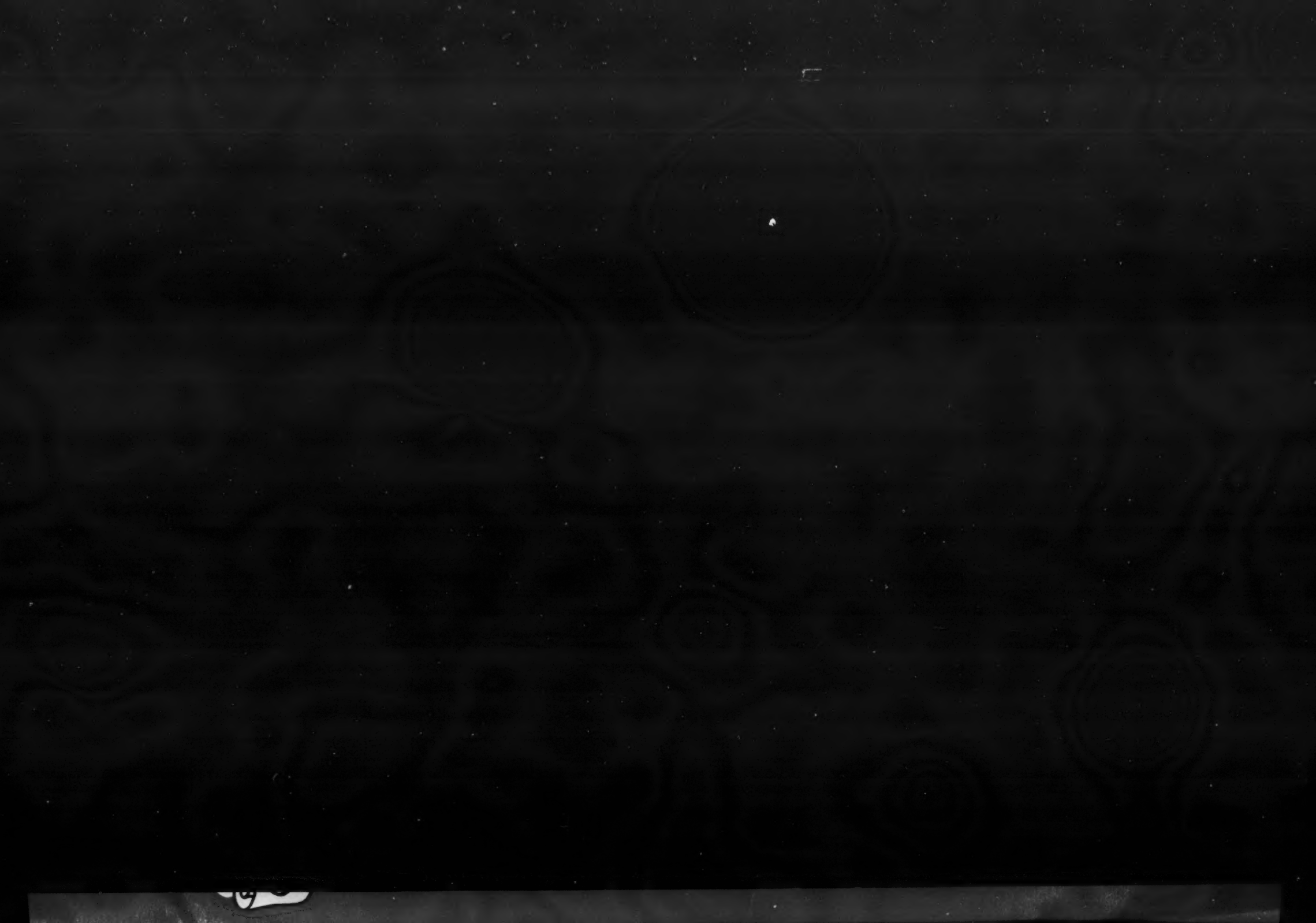
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